SYMPOSIUM
on
"Evidence Based Siddha: A Renaissance of Tradition through Modern Research"

19th DECEMBER 2025

PROCEEDINGS

Organised by

Department of Pharmacognosy

In collaboration with

Association of Pharmaceutical Teachers of India
Tamil Nadu Branch

Periyar College of Pharmaceutical Sciences

Tiruchirappalli – 620 021

Approved by Govt. of Tamil Nadu and Pharmacy Council of India
Affiliated to The Tamilnadu Dr, M.G.R. Medical University, Chennai

SYMPOSIUM ON

EVIDENCE BASED SIDDHA
A RENAISSANCE OF TRADITION THROUGH MODERN MEDICINE

19.12.2025

PROCEEDINGS

In collaboration with

ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA

TN BRANCH

Organised by

DEPARTMENT OF PHARMACOGNOSY

Editor

Dr. R. Senthamarai, M.Pharm., Ph.D.,
Principal & Professor
Department of Pharmacognosy

Co - editors

Dr. S. Shakila Banu, M.Pharm., Ph.D.,
Head, Department of Pharmacognosy

Dr. C. Vijayalakshmi, M.Pharm., Ph.D.,
Associate Professor, Department of Pharmacognosy

Periyar College of Pharmaceutical Sciences
Tiruchirappalli - 620 021
Approved by Govt. of Tamil Nadu and Pharmacy Council of India
Affiliated to The Tamilnadu Dr, M.G.R. Medical University, Chennai

Title: Symposium on Evidence Based Siddha - A Renaissance of Tradition through Modern Research

Editor:
Dr. R. Senthamarai, M.Pharm., Ph.D.,
Principal & Professor
Department of Pharmacognosy

Co - Editor:
Dr. S. Shakila Banu, M.Pharm., Ph.D.,
Professor & Head
Department of Pharmacognosy

Dr. C. Vijayalakshmi, M.Pharm., Ph.D.,
Associate Professor
Department of Pharmacognosy

Scientific Committee:
Mrs. M. Shantha, M.Pharm.,
Associate Professor
Department of Pharmacognosy

Mrs. K. S. Pragathi, M.Pharm.,
Associate Professor
Department of Pharmacognosy

Mr. R. Dinesh, M.Pharm.,
Assistant Professor
Department of Pharmacognosy

Editorial Office:
Periyar College of Pharmaceutical Sciences
Periyar Centenary Educational Complex
K. Sathanoor Main Road
Tiruchirappalli - 620 021
Tamil Nadu, India.

+91 - 431 - 2459911 +91 77083 68880

periyarcps@gmail.com www.periyarpharma.in

ISBN Number: **978-93-5602-205-8**

9 789356 022058

Message from the Editor‘s Desk.....

Prof. Dr. R. Senthamarai
Convener
Principal & Professor
Periyar College of Pharmaceutical Sciences
Tiruchirappalli, Tamil Nadu.

It gives us great pleasure and pride to present the proceedings of the Symposium on “Evidence-Based Siddha: A Renaissance of Tradition through Modern Research.” This book is an important step in connecting the ancient wisdom of the Siddha medical system with today’s scientific methods and modern technology.

Siddha is one of the oldest healing systems in the world, deeply rooted in the culture and traditions of South India. For thousands of years, it has offered holistic care through natural remedies, lifestyle practices, and spiritual balance. As we move forward into the 21st century, we must study this traditional practice scientifically, so that its safety, efficacy and benefits can be understood and accepted globally.

This symposium is created to bring together Siddha practitioners, doctors, pharmacists, botanists, chemists, and other researchers on a single platform. The papers and presentations in this volume showcase the wide range of research underway today, from studying medicinal plants and identifying their active components to standardizing raw materials and investigating how Siddha formulations work in our body.

The variety and quality of the contributions reflect a strong global interest in rediscovering and strengthening Siddha medicine. “Evidence-Based Siddha” does not change or weaken tradition; instead, it proves that ancient knowledge can grow still stronger when supported by scientific evidence. This combination of tradition and research holds great promise for the future of integrative healthcare.

We sincerely thank all authors, speakers, reviewers, and participants for their valuable contributions. We also extend our gratitude to the organisers and sponsoring institutions for their hard work and dedication. We express our heartfelt gratitude to Dr. K. Veeramani, President, Periyar Maniammai Institute of Science & Technology, Chennai, and Mr. V. Anburaj, Advisor, for their continuous support, inspiring guidance, and encouragement. Their invaluable contribution has played a major role in making this event a great success.

We hope that these proceedings will inspire students, researchers and policymakers to continue exploring Siddha medicine and help build a future where traditional wisdom and modern science work hand in hand.

With regards,

(Dr. R. Senthamarai)

Message from the Chief Guest.....

Dr. S. Govindaraj
District Siddha Medical Officer (Retd.)
Thanjavur, Tamil Nadu.

It gives me immense pleasure to be a part of the National Symposium on "Evidence Based Siddha - A Renaissance of Tradition through Modern Medicine" organised by the Department of Pharmacognosy, Periyar College of Pharmaceutical Sciences, Tiruchirappalli.

Siddha medicine is one of India's most ancient healing traditions that holds a wealth of therapeutic wisdom. In today's scientific era, the true strength of such traditional systems lies not merely in their legacy but in their ability to adapt, integrate, and evolve through evidence-based validation. This symposium stands as a remarkable platform that bridges ancient knowledge with modern scientific rigour, fostering a renewed understanding of Siddha through advanced analytical techniques, phytopharmacological research, and technological innovations, including Artificial Intelligence.

I am delighted to see the participation of students, scholars, faculty members, researchers, and practitioners from diverse domains who bring fresh perspectives and enthusiasm. The call for original research, discussions on medicinal plant authentication, and the emphasis on scientific standardisation highlight the commitment of the organisers toward high-quality academic contribution.

Periyar College of Pharmaceutical Sciences has consistently demonstrated excellence in Pharmacy education and research, and this symposium further reinforces its dedication to societal well-being and scientific advancement.

I congratulate the organising committee for crafting such a meaningful and timely event. I am certain that the deliberations, interactions, and presentations shared today will inspire new collaborations, ignite innovative research ideas, and strengthen the integration of traditional and modern healthcare systems.
My best wishes to all participants for a productive and enriching symposium.

With regards,

(Dr. S. Govindaraj)

Message from the Chief Guest.....

Dr. S. Kamaraj
District Siddha Medical Officer (Retd.)
Tiruchirappalli, Tamil Nadu.

Food has long been recognised as the first line of medicine in traditional healthcare systems, where the kitchen serves as a natural and accessible pharmacy. Siddha medicine, one of India's oldest organised medical traditions, emphasises harmony between diet, lifestyle, and nature as the foundation of health.

The National Symposium on "Evidence-Based Siddha: A Renaissance of Tradition through Modern Medicine", organised by the Department of Pharmacognosy, Periyar College of Pharmaceutical Sciences, Tiruchirappalli, represents a meaningful effort to strengthen the scientific basis of traditional medical knowledge. The symposium highlights the importance of integrating traditional wisdom with modern research through systematic documentation, pharmacological validation, and clinical evaluation.

The active participation of academicians, researchers, clinicians, and postgraduate students enriched the deliberations and knowledge exchange. The insights shared are expected to foster collaboration, encourage innovation, and support the effective integration of Siddha medicine with contemporary healthcare.

I sincerely congratulate the Convener and the entire organising team for their dedication to promoting quality research while upholding the wisdom of traditional healing practices. This initiative represents not only scientific advancement but also a deep respect for our rich medical heritage and a shared vision for a healthier and more holistic future.

I wish the symposium a grand success.

With regards,

(Dr. S. Govindaraj)

Message from APTI - TN Branch.....

Dr. V. Sankar
President
Association of Pharmaceutical Teachers of India
Tamil Nadu Branch

Greetings to Periyar College of Pharmaceutical Sciences, Tiruchirappalli, for organising a one day symposium on “Evidence - Based Siddha: A Renaissance of Tradition through Modern Research.” This symposium serves as a bridge between ancient wisdom and modern science, inspiring research, innovation, and collaboration in Siddha medicine. This event will bring together scholars, researchers, and professionals to exchange ideas, share knowledge, and explore innovative perspectives in this important field.

With regards,

Dr. V. Sankar

President - APTI Tamil Nadu Branch.

Message from Co - Convener.....

Prof. Dr. G. Krishnamoorthy
Co - Convener
Vice Principal & Professor
Periyar College of Pharmaceutical Sciences
Tiruchirappalli, Tamil Nadu.

On behalf of the organising committee, I would like to welcome you all to the one day Symposium on Evidence based Siddha - A Renaissance of Tradition through Modern Medicine on 19th December 2025, organised by the Department of Pharmacognosy at our institution.

It is a tremendous effort of the faculty of the department at the behest of the Principal that has resulted in meticulous scheming of the Symposium.

This encouragement given by our beloved Founder Chairperson, Dr. K.Veeramani ayya, and our dynamic Principal, Dr. R. Senthamarai, to organise this programme is tremendous.

This one day Siddha Symposium aspires to facilitate the Global expansion of Siddha across the domains of academics, research, outreach and industry, ensuring that its time-honoured principles find contemporary relevance in the present global health and wellness scenario.

This global initiative will ensure that the scientific essence and values of Siddha philosophy are recognised, respected, and integrated into trans disciplinary health education, research, and outreach strategies worldwide.

I congratulate the team and wish them great triumph for the successful conduct of the entire event.

I wish you all a fruitful and enlightening Symposium.

With regards,

(Dr. G. Krishnamoorthy)

ABOUT THE COLLEGE

Periyar College of Pharmaceutical Sciences, was established in 1982 in the name of the great social reformer THANTHAI PERIYAR. After Thanthai Periyar and Annai Maniammaiyar, their illustrious successor Dr. K. Veeramani M.A., B.L., has taken up the Herculean task of ushering young women in Pharmacy education and to a new era of scientific temperament by founding this institution exclusively for women and later it was converted into co-educational institution. Then renamed as Periyar College of Pharmaceutical Sciences in 2010. It is a premier Pharmacy institution in Tamil Nadu, offering D.Pharm, B.Pharm, M.Pharm and Ph.D programme with state - of - the art facilities and it has ISO 9001:2015 standards. The college has good infrastructure and sophisticated laboratory instrumentation. The college library is one of the best libraries with a vast collection of books and journals, as well as internet facilities. The college has received numerous grants under various schemes of AICTE, DST, DRDO, ICMR, ISTE, TNPSWT and TNSCST. The college has achieved totally 13 International Patents (UK, Germany, South Africa and Australia) & 5 Indian Patents were published. To its credit, the college has published 657 numbers of Research Publications at the National & International Level in various Peer Reviewed and Indexed Journals. The college is involved in campus publications such as Pharma Bulletin and Periyar Drug Information Centre News Letter. The Training and Placement Cell is well established, aiming to provide students with suitable jobs in reputed organisations. The college has produced 6310 Pharma Professionals, aimed to make them innovative and beneficial to the society.

ABOUT THE DEPARTMENT

Pharmacognosy is a core branch of the pharmacy curriculum, focusing on the physical, chemical, biochemical, and biological properties of natural drugs. It is a coveted department in the College, with a focus on advanced research in pharmacognosy, phytochemistry, and pharmacological screening of herbal drugs for potential lead molecules or new drugs. The department is involved in developing herbal formulations and standardizing raw materials according to WHO guidelines. The department has resources such as HPTLC, dissecting microscopes, compound microscopes, projection microscopes, binocular microscopes, trinocular microscopes and polychromic microscopes. The department is actively involved in plant research, including authentication of medicinal plants, pharmacognosy of medicinal plants, histochemical studies, isolation and evaluation of therapeutically important phytoconstituents, standardization of herbal drugs, and isolation, formulation, and evaluation of volatile components.

PERIYAR COLLEGE OF PHARMACEUTICAL SCIENCES

TIRUCHIRAPPALLI - 620 021

In collaboration with

ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA - TN BRANCH

SYMPOSIUM ON

"EVIDENCE BASED SIDDHA - A RENAISSANCE OF TRADITION THROUGH MODERN MEDICINE"

19th DECEMBER 2025

ABOUT THE SYMPOSIUM

This National symposium, “Evidence-Based Siddha: A Renaissance of Tradition through Modern Research”, is envisioned as a catalyst for this transformation. By bringing together experts from pharmacognosy, phytochemistry, pharmacology, clinical research, and regulatory sciences, the conference will provide a holistic yet evidence-driven framework for Siddha research and application. The sessions will cover: Artificial intelligence in traditional medicines; phytopharmacological investigations; authentication of medicinal plants; advanced analytical and molecular techniques for standardisation, safety, and toxicological evaluations; clinical trial methodologies; and strategies for knowledge dissemination.

ORGANISING COMMITTEE

CONVENER

Prof. Dr. R. Senthamarai
Principal

CO-CONVENER

Prof. Dr. G. Krishnamoorthy
Vice Principal

COORDINATOR

Dr. S. Shakila Banu
Head, Department of Pharmacognosy

CO - COORDINATOR

Dr. C. Vijayalakshmi
Associate Professor
Department of Pharmacognosy

MEMBERS

Mrs. M. Shantha
Associate Professor
Department of Pharmacognosy

Mrs. K. S. Pragathi
Associate Professor
Department of Pharmacognosy

Mr. R. Dinesh
Assistant Professor
Department of Pharmacognosy

SCIENTIFIC COMMITTEE

Prof. Dr. R. Senthamarai
Convener

Prof. Dr. G. Krishnamoorthy
Co - Convener

Dr. S. Shakila Banu
Coordinator

Dr. C. Vijayalakshmi
Co - Coordinator

Mrs. M. Shantha
Member

Mrs. K. S. Pragathi
Member

Mr. R. Dinesh
Member

SCIENTIFIC HIGHLIGHTS OF THE SYMPOSIUM

The National Symposium 2025, themed “Evidence-Based Siddha - A Renaissance of Tradition through Modern Medicine” serves as a dynamic academic platform to examine Siddha medicine through the lens of contemporary scientific validation. Organised by the Department of Pharmacognosy, Periyar College of Pharmaceutical Sciences, Tiruchirappalli, the symposium brings together students, researchers, practitioners, and healthcare enthusiasts from diverse scientific backgrounds.

The scientific programme of the symposium is thoughtfully curated to promote interdisciplinary learning and scholarly exchange. A total of 49 scientific presentations are featured, comprising 26 Oral Presentations and 23 E-Poster Presentations, highlighting research across Siddha medicine, Botany, Pharmacognosy, Pharmacy, Phytopharmacology, Medicinal Plant authentication, Advanced analytical techniques, and the emerging role of artificial intelligence in healthcare.

The symposium witnesses enthusiastic participation from 20 colleges across Tamil Nadu, representing multiple disciplines, including Siddha, Botany, and Pharmacy. A total of 152 participants are involved in the programme, with 107 participants attending in offline mode and 45 participants joining online, reflecting the symposium’s inclusive and hybrid academic approach.

LIST OF COLLEGES PARTICIPATED

- College of Pharmacy, Madras Medical College, Chennai
- Excel Siddha Medical College and Research Centre, Komarapalayam
- GRT Institute of Pharmaceutical Education and Research, Tiruttani
- Government Siddha Medical College, Chennai
- Government Siddha Medical College, Palayamkottai
- Holy Cross College (Autonomous), Tiruchirappalli
- Indra Ganesan College of Siddha Medical Science, Tiruchirappalli
- Jamal Mohamed College (Autonomous), Tiruchirappalli
- Jaya College of Paramedical Sciences – College of Pharmacy, Thiruninravur
- JKK Munirajah Institute of Health Sciences – College of Pharmacy, Komarapalayam
- JSS College of Pharmacy, Ooty, The Nilgiris
- Madurai Medical College, Madurai
- Nandha Siddha Medical College and Hospital, Erode
- Pharmacy Academy, Faculty of Pharmacy, IFTM University, Moradabad, Uttar Pradesh

LIST OF COLLEGES PARTICIPATED

- PSGR Krishnammal College for Women, Coimbatore
- School of Pharmacy, Dhanalakshmi Srinivasan University, Samayapuram, Tiruchirappalli
- School of Pharmacy, Sri Balaji Vidyapeeth (Deemed to be University), Puducherry
- Sir Isaac Newton Siddha Medical College and Hospital, Nagapattinam
- SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur
- Vellalar College of Pharmacy, Erode
- Vels Institute of Science, Technology and Advanced Studies (VISTAS), Chennai

PERIYAR COLLEGE OF PHARMACEUTICAL SCIENCES

TIRUCHIRAPPALLI - 620 021

An ISO 9001 : 2015 Certified Institution

Approved by Govt. of Tamil Nadu and Pharmacy Council of India, New Delhi

Affiliated to the Tamilnadu Dr. M.G.R. Medical University, Chennai

In collaboration with

ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA
TN BRANCH

SYMPOSIUM ON

"EVIDENCE BASED SIDDHA - A RENAISSANCE OF TRADITION THROUGH MODERN MEDICINE"

Inaugural Function

CHIEF GUEST

COLLEGE AUDITORIUM

19. 12. 2025

9.30 A.M.

Dr. S. Govindaraj, B.Sc., B.S.M.S., Ph.D.,

District Siddha Medical Officer (Retd.)

Thanjavur

Organised by

Department of Pharmacognosy

Periyar College of Pharmaceutical Sciences

Tiruchirappalli - 620 021

Programme Schedule

Timings	Event Details
9.00 - 9.30 a.m.	Registration
9.30 - 10.00 a.m.	Inauguration
10.00 - 10.15 a.m.	Tea Break
Plenary Lecture 1 10.15 - 11.00 a.m.	**Title:** Heritage of Siddha Medicine **Dr. S. Govindaraj** District Siddha Medical Officer (Retd.) Thanjavur
Plenary Lecture 2 11.00 - 11.45 a.m.	**Title:** Kitchen - A Base for Healthy Life **Dr. S. Kamaraj** District Siddha Medical Officer (Retd.) Tiruchirappalli
11.45 - 1.00 p.m.	E-Poster Presentation
1.00 - 1.30 p.m.	Valediction

Note: Virtual oral presentation for PG Students, Research Scholars, and Faculty will be held on **18.12.2025 at 10.00 a.m.**

Phone: +91 - 431 - 2459911
Mobile: +91 - 77083 68880
periyarcps@gmail.com
www.periyarpharma.in

PERIYAR COLLEGE OF PHARMACEUTICAL SCIENCES

TIRUCHIRAPPALLI - 620 021

An ISO 9001 : 2015 Certified Institution

Approved by Govt. of Tamil Nadu and Pharmacy Council of India, New Delhi

Affiliated to the Tamilnadu Dr. M.G.R. Medical University, Chennai

In collaboration with

ASSOCIATION OF PHARMACEUTICAL TEACHERS OF INDIA

TN BRANCH

SYMPOSIUM ON

"EVIDENCE BASED SIDDHA - A RENAISSANCE OF TRADITION THROUGH MODERN MEDICINE"

Valedictory Function

CHIEF GUEST

COLLEGE AUDITORIUM

19. 12. 2025

1.00 P.M.

Dr. S. Kamaraj, B.S.M.S., Dip.YOGA.,

District Siddha Medical Officer (Retd.)

Tiruchirappalli

Organised by

Department of Pharmacognosy

Periyar College of Pharmaceutical Sciences

Tiruchirappalli - 620 021

ABSTRACTS

ENHANCING PHARMACOVIGILANCE THROUGH ARTIFICIAL INTELLIGENCE AND ELECTRONIC HEALTH RECORDS

Bhuvaneshwari R[*1], Gopika P[1], Stellaa Robertson[2]

[*1] Pharma student, College of Pharmacy, Jaya College of Paramedical Sciences, Affiliated to the Tamil Nadu Dr. MGR Medical University, Thiruninravur-602024.

[2]Professor, College of Pharmacy, Jaya College of Paramedical Sciences, Affiliated to the Tamil Nadu Dr. MGR Medical University, Thiruninravur-602024.

ABSTRACT

Advances in artificial intelligence (AI) have introduced effective methodologies for identifying adverse drug reactions (ADRs) directly from electronic health records (EHRs), thereby overcoming several limitations of traditional pharmacovigilance systems. Conventional approaches rely largely on manual and spontaneous reporting, which is frequently incomplete, delayed, and inconsistent. As a result, a considerable proportion of ADRs, including recurrent adverse drug reactions, remain undetected in hospital settings, contributing to preventable morbidity, prolonged hospitalization, and increased healthcare costs. Machine learning (ML) and natural language processing (NLP) techniques enable the large-scale analysis of routinely collected clinical data comprising both structured information and unstructured free-text clinical notes. NLP-based models can extract clinically relevant ADR-related information from physician documentation, discharge summaries, and nursing records, thereby identifying safety signals that are missed by rule-based systems or manual review. When combined with demographic characteristics, medication histories, laboratory findings, and prior ADR events, predictive algorithms demonstrate improved accuracy in identifying high-risk patients and forecasting potential ADR occurrences. Recent literature provides increasing evidence supporting the application of EHR-integrated AI systems for automated signal detection, causal association analysis, and individualized ADR risk prediction. These technologies facilitate real-time alert generation and enhanced clinical decision support, addressing persistent gaps in ADR detection and reporting. By transforming routinely documented clinical data into actionable safety insights, AI-enabled ADR monitoring offers a proactive and reliable approach to medication safety. As healthcare systems continue to expand digital infrastructures, integrating AI and NLP into pharmacovigilance frameworks represents a critical advancement toward reducing preventable ADRs and improving overall patient outcomes.

Lipid Risk Modulation by *Desmostachya bipinnata* Root Extract: A Preclinical Study on Atherogenic and Coronary Risk Indices in Diet-Induced Obesity Rats

Author: Dr. R.Gandhimathi*, Professor Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies,Pallavarm,Chennai,Tamilnadu,India,600117

Mail Id: drgmathipharm2017@gmail.com

ABSTRACT

Context: Obesity is a major global health concern and major risk factor for a variety chronic diseases, including type 2 diabetes, cardiovascular diseases (CVD) stroke and hyperlipidemia. In the context of modern medicine, traditional herbal remedies are increasingly being explored for their potential to address metabolic disorders in a holistic manner. *Desmostachya bipinnata (D. bipinnata)* is a valuable medicinal plant long used in traditional Chinese medicine (TCM) has demonstrated promising therapeutic potential. Traditionally recognized for its effectives in treating digestive disorders, urinary tract infections, inflammations and even certain type of cancer, *D. bipinnata* is now being investigated for its potential anti-obesity and lipid-lowering properties. *Objective:* This study aims to evaluate anti-obesity potential of the ethanolic extract of *D. bipinnata* roots (EEDB) in albino Wistar rats with high fat diet (HFD) induced obesity. *Methods:* EEDB root was subjected to phytochemical screening and high-performance thin layer chromatography (HPTLC) analysis to identify major bioactive compounds. *In vitro* antioxidant and α-glucosidase inhibition assay were performed to evaluate the exacts metabolic potential. The anti-obesity activity of EEPD was assessed in albino Wistar rats fed a HFD with doses of 100, 200 and 400mg/kg administered orally for 40 days. Orlistat was used as a standard reference drug for comparison. *Results:* Preliminary phytoconstituents analysis confirmed the presence of flavonoids, terpenoids, saponins, phenolic compounds and tannins in the extract. The rats treated with EEDB at all three doses showed a significant reduction ($p<0.001$ & $p<0.01$) in food intake, body weight, Lee index, serum total cholesterol, atherogenic index, coronary risk index, insulin tolerance and inversely HDL and glucose tolerance compared to the induced group. The extract also demonstrated portent antioxidant effect by increasing enzymes such as superoxide dismutase (SOD), catalase (CAT) and glutathione (GSH) while reducing lipid peroxidation level. *Conclusion:* The findings suggest that *D. bipinnata* root extract possessed significant antiobesity efficacy, likely due to its hypophagic,hypolipidemic and antioxidant properties. *D. bipinnata* bioactive compounds may offer integrative benefits when used alongside conventional approaches, making it a candidate for development within

evidence-based modern Chinese medicinal practices, particularly for the management of obesity and associated metabolic disorders.

Keywords: *Desmostachya bipinnata*, anti-obesity, hypolipidemic effects, albino Wistar rats, Lee index, high fat diet.

ANTICANCER POTENTIAL OF *THOTTEA SILIQUOSA* ROOT EXTRACT IN HUMAN COLORECTAL CANCER

M. R. Elakkiya [1], M. Krishnasreya [1], and B. S. Chithra Devi1*

[1] Department of Botany, PSGR Krishnammal College for Women, Coimbatore, Tamil Nadu, India.

*Correspondance: bchitradevi@psgrkcw.ac.in

ABSTRACT

Human colorectal cancer is still one of the most common causes of cancer morbidity and mortality globally, thereby emphasizing the need for need for safer and more effective therapeutic strategies. The disruption of cell cycle regulatory mechanisms, especially at the G2/M checkpoint, plays a crucial role in uncontrolled proliferation of colorectal cancer cells and is primarily governed by cyclin-dependent kinase 1 (CDK1) and cyclin B1. In the present study, the aqueous root extract of *Thottea siliquosa*, a known medicinal plant, has been screened for anticancer activity in human colorectal cancer cells. In cell-based experiments, HCT116 cells showed a dose-dependent cytotoxicity, significant inhibition of cell migration, and pronounced G2/M phase cell cycle arrest. To identify the pharmacological bases of such effects, phytochemical profiling of the root extract was performed using GC–MS, followed by molecular docking of the identified compounds against CDK1 and cyclin B1. Among the identified molecules, isocorydine displayed the highest degree of affinity towards CDK1 and cyclin B1 (-7.2 and -6.2), followed by thunbergol (-6.7and -5.8) and squalene (-5.6 and -5.5), indicating potential modulation of CDK1 and Cyclin B1. ADME prediction indicated favourable drug-likeness and minimal toxicity concerns for the major bioactive constituents. Collectively, these findings suggest that *T. siliquosa* root extract induces G2/M phase arrest in colorectal cancer cells, potentially through coordinated modulation of CDK1 and Cyclin B1, with synergistic interactions among multiple phytochemicals contributing to its anticancer effects. Further in vitro and in vivo validation are warranted to explore its therapeutic potential as a plant-based anticancer agent.

Key words: *Thottea siliquosa*, human colorectal cancer, G2/M phase arrest, phytochemical profiling, and molecular docking.

Screening of Preliminary phytochemical and *In-vitro* wound healing property of *Hemigraphis colorata* Leaves (Acanthaceae)

R. Karthikeyan*, S.Shanmuganathan

School of Pharmacy, Sri Balaji Vidyapeeth, Puducherry - 607402

ABSTRACT

Background: Medicinal plants remain integral to global health care systems, particularly within traditional medical practices such as Ayurveda. *Hemigraphis colorata* (Acanthaceae) is traditionally used for the treatment of cuts and wounds, yet systematic scientific validation is limited. **Objective:** The present study aimed to standardize *H. colorata* leaves through phytochemical evaluation and to assess their *in-vitro* wound healing potential using a scratch assay. **Materials and Methods:** Leaves of *H. colorata* were extracted using solvents of varying polarity and subjected to qualitative phytochemical screening following standard procedures. *In-vitro* wound healing activity was evaluated by scratch assay using 3T3-L1 fibroblast cell lines. **Results:** Phytochemical screening revealed the presence of carbohydrates, proteins, glycosides, flavonoids, tannins, steroids, terpenoids and saponins in different extracts. Ethanolic extract showed the widest range of bioactive constituents. In the scratch assay, the leaf extract significantly enhanced cell migration and wound closure compared to control. **Conclusion:** The findings scientifically support the traditional use of *H. colorata* in wound management. The study establishes preliminary quality and efficacy parameters, highlighting its potential as a natural wound healing agent in integrative medicine. **Keywords:** *Hemigraphis colorata*; Phytochemical screening; Herbal standardization; Wound healing; Scratch assay; Integrative medicine

EVALUATION OF *IN VITRO* ACTIVITY OF THE ETHANOLIC EXTRACT OF *ASTERACANTHA LONGIFOLIA* (L.) NEES SEEDS

T. Bhuvaneshwari*, S. Shamalar, S. Karpagam Kumara Sundari, R. Senthamarai Department of Pharmacology, Periyar College of Pharmaceutical Sciences, Tiruchirappalli-620 021, Tamil Nadu, India.

ABSTRACT

Herbal medicine has played a vital role in traditional healthcare system, and plants like *Asteracantha longifolia* (L.) Nees being widely utilized for their therapeutic properties. This study evaluates the antidiabetic potential of *A. longifolia* seeds through *in vitro* assays targeting α-glucosidase and β-galactosidase enzymes. Extracts were prepared using petroleum ether and ethanol, followed by enzyme inhibition assays to measure their efficacy. The α-glucosidase inhibition assay revealed significant activity with the ethanolic extract, demonstrating an IC50 value of 73.43 µg/ml compared to the standard drug, acarbose. Similarly, the β-galactosidase inhibition assay indicated substantial enzymatic inhibition, with an IC50 value of 82.87 µg/ml. These findings underscore the potential of *A. longifolia* as a safer and effective alternative in managing diabetes mellitus and advocate further exploration of its active constituents and mechanisms of action. Until date, the *in vitro* alpha glucosidase and beta galactosidase enzyme inhibition test have not been studied.

Keywords: diabetes, *Asteracantha longifolia*, α-glucosidase, β-galactosidase, acarbose, IC50

Computational Evaluation of Polyphenols Targeting VEGFR-2 in Tip cellDriven Ocular Neovascularization for Diabetic Retinopathy

[1]Vasanth R*, Janani Sri S S, [1]Jubie S

[1]Department of Pharmaceutical Chemistry, JSS College of Pharmacy, Ooty,

JSS Academy of Higher Education and Research, Mysuru. e-mail:

vasanthanalysis@gmail.com

ABSTRACT

India is known as the "Diabetic Capital" of the world, with about 66.6 million people affected by diabetes. Approximately 10 million diabetic patients in India suffer from diabetic retinopathy (DR). To date, Diabetic blindness is becoming a major public health concern. MAB's are only treatment plan for DR. No small molecule are clinically proved for DR. So, our present research focus on evaluating small molecules as VEGFR-2 inhibitor for DR. **Aim:** To identify potential target for Diabetic retinopathy and lead compounds through Network Pharmacology, Structure based drug design such as molecular docking, MM-GBSA, molecular dynamics studies. **Methods:**

Collected VEGFR-2-related targets from databases like UniProt, GeneCards, and STRING. Built a compound-target-disease network using Cytoscape v3.10. Designed Gigentol like molecules subjected to Molecular docking, MM-GBSA, MD by schrodinger suite 2025-2. ADME by DataWarrior. **Results:** Polyphenols and alkaloids emerged as potent VEGFR leads due to high degree, closeness, and betweenness centrality through Network pharmacology. Molecular docking, MM-GBSA, and MD studies focused on polyphenols like Gigantol posses -10.2 kcal/mol (PDB: 3VHE); pharmacophoric features led to 50 synthetically feasible substituted chalcone derivatives as potent VEGFR-2 inhibitors. **Conclusion:** Our Study suggest that substituted chalcones as promising therapeutic leads for DR via VEGFR-2 inhibition through *in silico* studies.

Keywords: Diabetic retinopathy, VEGFR-2, Gigantol and substituted chalcone.

IDENTIFICATION OF NOVEL HIF-1A STABILIZERS FOR DIABETIC WOUND THERAPY THROUGH COMPUTATIONAL EVALUATION

Janani Sri S S[*1], Vasanth R[1], Jubie Selvaraj[1]

[1]Department of Pharmaceutical Chemistry, JSS College of Pharmacy, JSS Academy of Higher Education and Research, Ooty-643001, The Nilgiris, Tamil Nadu, India.

E-mail: jananisrisaakthivel@gmail.com

ABSTRACT

Background: Diabetic wound represents a significant clinical challenge affecting over 9 million patients annually. Impaired angiogenesis and reduced hypoxia-inducible factor-1 alpha (HIF-1α) stability are key pathological features. Histone deacetylase-1 (HDAC-1) selectively targets HIF-1α transactivation, making it a promising therapeutic target. **Aim:** To design a novel small molecule as selective HDAC-1 inhibitors, thereby enhancing HIF-1α stabilization for the therapeutic management of diabetic wounds. **Method:** Polyphenol interactions with the identified target were analysed via Cytoscape. HDAC-1/p300 protein-protein docking to identify active binding sites. Top-ranked polyphenols were conjugated with celecoxib and validated via molecular docking (PDB: 4BKX), ADME profiling, MM-GBSA, and molecular dynamics simulations. **Results:** Protein–protein docking indicates specific amino acid residues play a crucial role in stabilizing the HDAC-1/p300 interface. From the top 20 screened polyphenols, the LuteolinCelecoxib conjugate emerged as the lead candidate, exhibiting superior binding affinity (9.3 kcal/mol) and robust MM-GBSA free energy (-36.2 kcal/mol). ADME profiling confirmed favorable pharmacokinetic properties, while Molecular dynamics simulations validated the conjugate's stability within the HDAC-1 active site. **Conclusion:** In silico studies shows, the luteolin–celecoxib combination binds strongly and stable to HDAC-1, indicating its potential to alleviate diabetic wound.

Key words: HDAC-1, HIF-1A, *In-silico*, Diabetic wound

DESIGN & SYNTHESIS OF THE SELECTED THIADIAZOLE & OXADIAZOLE DERIVATIVES AS ANTI-PARKINSON'S AGENTS TARGETING SIRT2 ENZYME

Revathi P*, Asif Shaik, Gomathy S

Department of Pharmaceutical Chemistry, JSS College of Pharmacy, JSS Academy of Higher Education & Research, Ooty 643001, The Nilgiris, Tamil Nadu, India.

Email: prevathi3010@gmail.com

ABSTRACT

ABSTRACT

Background: Parkinson's disease involves dopaminergic neuron loss, oxidative stress and α-synuclein aggregation. Targeting SIRT2 a NAD^+-dependent deacetylase offers neuroprotective potential. Thiadiazole and Oxadiazole derivatives known for antioxidant and neuroprotective effects provide promising scaffolds with good CNS permeability. **Aim:** To develop and evaluate Thiadiazole/Oxadiazole derivatives as potential SIRT2 modulators for anti-Parkinson's therapy using a structure-based design approach. **Methods:** A structure-based drug design strategy using molecular docking was employed to identify scaffolds with strong affinity for the SIRT2 active site. The designed thiadiazole and oxadiazole derivatives were synthesized through condensation and cyclization reactions characterized by IR, ^1H NMR and mass spectrometry and evaluated for *in vitro* SIRT2 inhibition, antioxidant activity, and neuroprotective effects in cell-based assays. **Results:** Docking studies identified several derivatives with high binding affinity ranges from -7.00 to -11.21 kcal/mol and compared with standard resveratrol. Molecular dynamics confirmed the stability of selected ligand–SIRT2 complexes. **Conclusion:** The study identifies thiadiazole & oxadiazole derivatives as potential SIRT2 modulators with neuroprotective effects, offering a rational framework for developing novel anti-Parkinson's agents for further preclinical evaluation.

Keywords: SIRT2 enzyme, Thiadiazole, Oxadiazole, Neuroprotection

FORMULATION AND EVALUATION OF ANTI HYPERPIGMENTATION CREAM FROM LIQUORICE

A. Shanmuga Priya*, C. Rajesh, S. Karpagam Kumara Sundari, R. Senthamarai

Department of Pharmacology, Periyar College of Pharmaceutical Science

Tiruchirappalli-620 021, Tamil Nadu, India.

ABSTRACT

This research focuses on the formulation and evaluation of a natural anti-hyperpigmentation cream using liquorice extract (Glycyrrhiza glabra) and activated coconut shell charcoal (Cocos nucifera). The study aims to develop a synergistic, eco-friendly skincare solution targeting hyperpigmentation, skin brightening, and detoxification. Liquorice extract, rich in Glabridin, is known for its ability to inhibit melanin production and provide antioxidant benefits, while activated charcoal helps in cleansing, detoxifying, and absorbing impurities from the skin. It involved extensive preformulating studies, including UV-Visible spectrum analysis, IR, and HPLC, to characterize the active components. The formulation process followed the oil-inwater (O/W) emulsion method, where the oil phase (coconut oil, beeswax, paraffin oil, and emulsifiers) was heated and mixed with the aqueous phase (glycerine, liquorice extract, and activated charcoal) at 70-75°C. The resulting cream was evaluated based on parameters such as pH, Spread ability, homogeneity, texture, stability, and microbial contamination. Further, confirmatory tests, including antioxidant and tyrosinase inhibition assays, were conducted to assess the cream's effectiveness. It showed that the formulated cream exhibited strong antioxidant properties, as confirmed by the DPPH assay, which helps protect the skin from oxidative stress. The tyrosinase inhibition test validated its role in reducing melanin synthesis, contributing to skin brightening and hyperpigmentation reduction. Additionally, stability and microbial studies ensured the cream's safety, maintaining its effectiveness over time without phase separation or contamination.

This study successfully developed a stable, effective, and natural anti-hyperpigmentation cream with significant skin benefits. The formulation provides a sustainable alternative to chemical-based creams. Future research should include clinical trials for long-term efficacy and the incorporation of additional natural ingredients to enhance skin nourishment

Integrative Network Pharmacology and Pharmacophore Modelling for Targeting BACE1 in Alzheimer's Disease Drug Discovery.

Doniparthi Neeraja*[1], Dr. Srikanth Jupudi[1]

[1]Department of Pharmaceutical Chemistry, JSS College of Pharmacy, JSS Academy of Higher Education & Research, Ooty – 643001, Tamil Nadu, India. E-mail: neerajadoniparthi@gmail.com

ABSTRACT

Background: Alzheimer's disease (AD) is a progressive neurodegenerative disorder marked by amyloid-beta (Aβ) plaque accumulation, causing cognitive and memory decline. β-Secretase 1 (BACE1), containing two catalytic aspartates (Asp32 and Asp228), plays a crucial role in Aβ production and serves as a key therapeutic target in AD drug development. **Methodology:** The intricate binding pattern and pharmacophoric ensemble of BACE1 inhibitors was studied through various approaches such as, molecular docking, MM/GBSA, ADMET, pharmacophore and 3D-QSAR studies employing 283 BACE1 co-crystal structures reported in protein data bank. A Network Pharmacology approach was implemented to understand the off-target effects of the BACE1 inhibitors. **Results:** Ten pharmacophore models were generated, and ADHRR-Hypo 1 was selected as the best, consisting of one H-bond acceptor, one donor, one hydrophobic feature, and two aromatic rings, with strong validation scores (survival score = 5.19). The model was successfully validated by Fischer randomization, test set (r = 0.929), LOO, LFO, and decoy analyses. Docking and MM/GBSA studies showed favorable binding energies (–8.4 to –1.3 kcal/mol and –73.83 to –20.32 kcal/mol). Binding DB analysis of the top 10 compounds identified 23 targets associated with over 100 diseases via DisGeNET. **Conclusion:** The study concludes that BACE1 inhibition requires key pharmacophoric features: a hydrogen bond donor, acceptor, hydrophobic group, and two aromatic rings. Network pharmacology analysis revealed that many inhibitors also target BACE2 and Cathepsin-D, indicating reduced specificity and potential off-target effects.

SIDDHA MEDICINE AND MODERN NEUROSCIENCE: EXPLORING AN INTEGRATIVE, NON-INVASIVE APPROACH TO NEUROLOGICAL CARE

Bhujithra M, Dr. M. Thirumal*, Dr R. Kamaraj

Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.

Email: bhujimohanavel02@gmail.com

ABSTRACT

Neurological disorders represent a major global health burden, yet current treatments remain largely symptom-oriented and expensive. This review explores the integration of Siddha medicine with modern neuroscience as a complementary approach to neurological care. Evidence indicates that Siddha herbs including *Bacopa monnieri, Withania somnifera, Centella asiatica, Curcuma longa,* and *Mucuna pruriens* exhibit antioxidant, antiinflammatory, and neurotransmitter-modulating properties that may slow neurodegeneration and enhance cognitive function. Polyherbal formulations demonstrate multi-target effects in experimental models of Alzheimer's disease, Parkinson's disease, stroke, epilepsy, and neurodevelopmental disorders. Additionally, Siddha non-invasive interventions including Varmam therapy, therapeutic massage, yoga, pranayama, and meditation influence autonomic regulation and neuroplasticity, improving functional outcomes and quality of life. Compared with modern brain stimulation techniques, Siddha therapies offer cost-effective and personalized care. This review highlights the potential of an integrative Siddha neuroscience framework for neurological care while emphasizing the urgent need for large-scale clinical trials, standardized protocols, and mechanistic validation to support evidence-based integration into contemporary healthcare.

Keywords: Cognitive function, integrative medicine, siddha medicine, neurological disorders, non- invasive therapies

Comparative Anticancer Efficacy of Siddha Formulations on Human Oral Cancer (KB) Cell Line

Kuberan M[1], Dr.M.Thirumal[1]*, Dr.R.Kamaraj[1]

[1]Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.

Email: kuberanadhitiya@gmail.com (Presenting Author)

ABSTRACT

Cancer treatment with minimal side effects remains a major challenge, prompting increasing interest in plant-based and traditional medicines. Siddha formulations have long been used in Indian medicine, yet their anticancer potential is not fully validated scientifically. The present study evaluates and compares the in-vitro anticancer activity of two Siddha formulations, MahaVallathy Leghiyam (MVL) and Neeradi Muthu Vallathy Leghiyam (NMVL), against human oral cancer KB cell lines. Aqueous extracts of both formulations were assessed for cytotoxic and antiproliferative effects using the MTT assay, and apoptotic activity was analyzed through propidium iodide (PI) and acridine orange/ethidium bromide (AO/EB) dual staining techniques. The results demonstrated a dose- and time-dependent inhibition of KB cell proliferation. The IC_{50} values were found to be 3.25 mg/mL for MVL and 1.25 mg/mL for NMVL, indicating greater potency of NMVL at lower concentrations. Morphological and fluorescence analyses revealed characteristic features of apoptosis, including cell shrinkage, chromatin condensation, nuclear fragmentation, and membrane blebbing, with NMVL showing a higher apoptotic index than MVL. Overall, the findings suggest that NMVL exhibits superior anticancer activity compared to MVL, likely due to its bioactive phytoconstituents. The study supports the potential use of NMVL as a promising adjuvant therapeutic agent in oral cancer management, warranting further in-vivo and clinical investigations.

Keywords : Siddha medicine, Oral cancer, KB cells, MTT assay, Apoptosis, In-vitro study.

A REVIEW ON THE CONCEPT OF NANOTECHNOLOGY IN SIDDHA MEDICINE WITH SPECIAL REFERENCE TO HERBO-MINERAL FORMULATION

Lakshmi Priya T [1], Thirumal.M[1], Kamaraj R[1]

[1]Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.

lakshmipriya25t@gmail.com

ABSTRACT

The Siddha system of medicine uses a wide range of herbo-mineral formulations prepared through repeated purification, grinding, and heating processes. These traditional methods result in a significant reduction in particle size, leading to the formation of nanoparticles. Preparations such as Parpam, Chenduram, Chunnam, and Kattu are considered unique Siddha nanomedicines with enhanced therapeutic efficacy and reduced toxicity. Modern analytical techniques like SEM, TEM, XRD, FTIR, and DLS have confirmed the presence of nanoparticles in several Siddha formulations containing mercury, gold, silver, and zinc. These nanoparticles exhibit improved bioavailability, better cellular penetration, and targeted drug action. Although nanotechnology is considered a modern scientific advancement, Siddha medicine has effectively applied its principles for centuries. Scientific validation of these traditional nanomedicines can help in standardization, safety evaluation, and global acceptance of Siddha therapeutics.

Keywords: Siddha medicine, Nanotechnology , Herbal preparation , Nano particles, Sidha nano medicines

EVIDENCE-BASED STANDARDIZATION AND PHARMACOLOGICAL VALIDATION OF SIDDHA HERBAL MEDICINES IN SKIN DISORDERS AND WOUND HEALING

Srilakshmi S [1], Thirumal.M[1], Kamaraj R[1]

[1]Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.

srisowji2003@gmail.com

ABSTRACT

Skin disorders and impaired wound healing remain significant clinical challenges due to infection, inflammation, oxidative stress, and delayed tissue regeneration. Traditional Siddha medicine has long employed herbal drugs for the management of dermatological conditions and wound care. However, their wider acceptance requires systematic scientific validation. The present review critically examines the evidence-based standardization and pharmacological validation of Siddha herbal medicines used in skin disorders and wound healing, with emphasis on modern analytical and experimental approaches. Published studies were analyzed to evaluate pharmacognostic identification, physicochemical parameters, phytochemical profiling, and chromatographic fingerprinting, including TLC and HPTLC, employed to ensure quality, purity, and batch-to-batch consistency of siddha skin medicines. The review further synthesizes experimental evidence from in vitro and in vivo pharmacological studies demonstrating antimicrobial, anti-inflammatory, antioxidant, and wound-healing activities of standardized siddha herbal drugs using established models such as excision and incision wound assays. Findings indicate that proper standardization plays a critical role in achieving reproducible biological activity, thereby strengthening the scientific credibility of Siddha formulations. Despite promising preclinical evidence, limitations such as variability in formulations, lack of large-scale clinical trials, and regulatory challenges persist. This review highlights the necessity of integrating traditional Siddha knowledge with contemporary quality-control measures and pharmacological evaluation to facilitate translational research and evidence-based clinical application. Strengthening standardization frameworks and expanding clinical validation may enable Siddha herbal medicines to contribute effectively to modern dermatological and wound-care practices.

Keywords: Siddha medicine, Skin disorders, Wound healing, Herbal drug standardization, Pharmacological validation

HARNESSING ARTIFICIAL INTELLIGENCE TO TRANSFORM RARE DISEASE CARE

R. Gowri, R.Meenakshi sundaram,T. Gayathri, G.Harini

GRT Institute of Pharmaceutical Education and Research,Tiruttani

Email : gowripharmajaya@gmail.com

ABSTRACT

.

Artificial intelligence (AI) is transforming orphan drug development by addressing key challenges such as limited data availability and small patient populations. Advanced machinelearning algorithms integrate genomic, clinical, and biomedical literature data to elucidate disease mechanisms and identify promising therapeutic targets. AI-driven drug repurposing strategies accelerate the identification of suitable existing therapies, significantly reducing development time and cost. In addition, generative AI models enable the rapid design and optimization of novel molecules tailored to rare diseases.Within clinical development, AI enhances patient identification, supports the use of synthetic control arms, and facilitates adaptive trial designs, thereby improving the feasibility and efficiency of studies in rare conditions. AI also advances precision medicine by predicting patient-specific treatment responses. Collectively, these applications improve efficiency across the drug development pipeline and increase the likelihood of delivering effective therapies to individuals with rare diseases.Early diagnosis, combined with symptomatic and supportive care, plays a crucial role in improving quality of life, even when curative treatments are unavailable. Notable examples include spinal muscular atrophy caused by *SMN1* gene mutations and Duchenne muscular dystrophy resulting from dystrophin gene defects, both of which are now being addressed through advanced gene-based therapies.Furthermore, AI-based systems such as **MARVEL**, developed by Baylor College of Medicine, assist in prioritizing potentially pathogenic variants in Mendelian disorders. By leveraging machine-learning models trained on large genomic databases and integrating patient exome and phenotypic data, MARVEL effectively ranks candidate disease-causing genes. **Conclusion:** AI is poised to accelerate orphan drug development by rapidly identifying disease targets, designing innovative therapies, and repurposing existing drugs. It also enhances early patient detection and optimizes clinical trial design for small populations. Overall, AI reduces development time and costs while expanding therapeutic options for rare diseases.

Keywords: Orphan drugs, Duchenne Muscular Dystrophy, Mendelian disorders.

PHYTOCHEMICAL CHARACTERIZATION AND ANTIOXIDANT POTENTIAL OF HYGROPHILA AURICULATA (SCHUMACH.) HEINE. USING SPECTROSCOPIC AND CHROMATOGRAPHIC APPROACHES.

SHILPA L S [1], MANONMANI R[2]*

[2]*Assistant Professor, PG & Research Department of Botany, Holy Cross College (Autonomous), Affiliated to Bharathidasan University, Trichy-620002, Tamil Nadu, India.

[1]Research Scholar, PG & Research Department of Botany, Holy Cross College (Autonomous), Affiliated to Bharathidasan University, Trichy-620002, Tamil Nadu, India.

ABSTRACT

Hygrophila auriculata (Schumach.) Heine. (Acanthaceae) is a medicinal plant widely used in traditional systems of medicine for the management of renal, inflammatory, and metabolic disorders. The present study aimed to scientifically evaluate the phytochemical composition and antioxidant potential of *H. auriculata* (Schumach.) Heine. using spectroscopic and chromatographic techniques. Ethanolic extracts of *H. auriculata* (Schumach.) Heine. were subjected to qualitative and quantitative phytochemical screening, which confirmed the presence of bioactive constituents such as flavonoids, phenolics, tannins, alkaloids, saponins and terpenoids. UV-Visible spectroscopic analysis revealed characteristic absorption peaks corresponding to polyphenolic compounds, while FT-IR spectroscopy identified functional groups associated with alcohols, phenols, alkanes and aromatic compounds. GC-MS analysis led to the identification of several bioactive compounds with reported antioxidant and pharmacological relevance. The antioxidant activity of the extract was assessed using the DPPH free radical scavenging assay, which demonstrated significant, concentration-dependent radical scavenging activity. The findings of this study indicate that *H. auriculata* (Schumach.) Heine. is a rich source of bioactive phytochemicals with notable antioxidant properties. The results provide scientific support for its traditional medicinal use and suggest its potential for further pharmacological and therapeutic investigations.

Keywords: *Hygrophila auriculata* (Schumach.) Heine., phytochemical analysis, UV-Vis, FTIR, GC-MS, antioxidant activity.

SCIENTIFIC VALIDATION OF SIDDHA FORMULATIONS: BRIDGING TRADITIONAL KNOWLEDGE WITH MODERN BIOMEDICAL EVIDENCE.

Praveena Anitta A[1]., Manonmani R[2*].

[2*] Assistant Professor, PG and Research Department of Botany, Holy Cross College (Autonomous), Affiliated to Bharathidasan University, Trichy 620 002, Tamil Nadu, India.

[1] Research scholar, PG and Research Department of Botany, Holy Cross College (Autonomous), Affiliated to Bharathidasan University, Trichy 620 002, Tamil Nadu, India.

ABSTRACT

The Siddha system of medicine is one of India's oldest traditional healthcare systems, with a rich legacy of plant-based, mineral and herb-mineral formulations. Despite strong empirical use, wider integration into modern healthcare requires systematic scientific validation to ensure safety, efficacy and quality. This presentation proposes a structured framework for validating Siddha formulations by integrating traditional knowledge with modern biomedical science. The approach includes textual authentication, botanical identification, quality control and standardization, preclinical evaluation and clinical validation. Quality assessment involves physicochemical analysis, phytochemical profiling using HPTLC and HPLC and contaminant analysis for heavy metals and microbial load. Preclinical evaluation comprises in vitro and in vivo pharmacological studies, toxicity assessments and mechanistic investigations. The role of advanced analytical techniques, in silico modeling, omics approaches and artificial intelligence is highlighted for understanding multi-target actions and improving safety prediction. Addressing challenges such as polyherbal complexity and regulatory barriers can enable global acceptance of evidence-based Siddha formulations.

Keywords: Siddha system of medicine, scientific validation, standardization, preclinical evaluation, integrative healthcare.

COMPARATIVE REVIEW STUDY OF SIDDHA MEDICINE IN HUMAN HEALTH

Dr.M.Sumithra

School of Pharmaceutical Sciences, VISTAS

ABSTRACT

Siddha medicine places great importance on prevention and health promotion, advocating for specific regimens according to the season and time of day (pathiyam and apathiyam). The system uses a wide range of therapies, including purgative, oleation, fasting, emetic, steam, physical, bloodletting, solar, and yoga therapies, as well as Kayakarpam (rejuvenation therapy) for longevity and disease prevention. Siddha practitioners employ herbal and mineral-based medicines, often derived from alchemy and iatrochemistry, to treat both acute and chronic diseases, including digestive, respiratory, genito-urinary, circulatory, and metabolic disorders. This study aims to comparatively evaluate the role and effectiveness of Siddha medicine in human health in relation to contemporary medical approaches. Siddha medicine emphasizes a holistic understanding of health based on the balance of Vatham, Pitham, and Kabham, focusing on prevention, lifestyle regulation, and natural therapies. The study compares treatment outcomes, safety profile, cost-effectiveness, and patient compliance in managing common chronic and lifestyle-related disorders. Findings indicate that Siddha medicine demonstrates significant benefits in improving quality of life, enhancing immunity, and managing chronic conditions with minimal side effects. The comparative analysis highlights Siddha medicine as a valuable complementary healthcare system, supporting integrated and patient-centered health management. The commercial avaliable Kabasura Kudineer tablets, Nilavembu Kudineer tablets, Amukkara Chooranam capsules, Thoothuvalai Chooranam syrup, and standardized Vasantha

Kusumakaram Mathirai are newly introduced Siddha medicines in modern practice

EVALUATION OF *INVITRO* ANTIMICROBIAL ACTIVITY OF AQUEOUS ROOT EXTRACT OF *SMILAX CHINA* LINN

G.Akash*, D. Kokilavani, B. Rajkapoor,

S. Karpagamkumara sundari, R. Senthamarai

Department of Pharmacology, Periyar College of Pharmaceutical Sciences Tiruchirappalli- 21

ABSTRACT

The root of *Smilax china* L. is used in traditional Korean medicine. We found that the *Smilax china* root extract has strong antimicrobial activity. The aim of the study was to evaluate the antimicrobial activity of aqueous root extract of *Smilax china* L. against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. The anti microbial activity of 100 µL of the samples of different concentrations (25, 50,100,200,400 µg/mL) was investigated by agar well diffusion method. The results were compared with the standard antibiotic chloramphenicol (30mcg/disc) and Ciprofloxacin (5mcg/ disc). The Minimum Inhibitory Concentration of *S.China* root extract was determined by analyzing a range of concentration from 25 to 400µg/mL. The MIC was identified to 800µg/mL which showed 50% inhibition of *S.aureus* compared to the control. The Minimum Bactericidal Concentration was therefore determined to be 1600 µg/mL. For P. aeruginosa, the MIC was established at 400 µg/mL, with a 50% inhibition compared to the control, and the MBC was determined to be 800 µg/mL.

Keywords: *Smilax china* L., *Staphylococcus aureus, Pseudomonas aeruginosa, a*ntimicrobial activity

COMBATING RESPIRATORY DISEASES BY A NOVEL APPROACH : THE CURRENT IMPLICATIONS OF HERBAL DRUGS.

D. Mugeshkumar *, Punitha Sundaresan , T. Shri Vijaya Kirubha,

S. Karpagam Kumara Sundari , R.Senthamarai

Department of Pharmacology, Periyar College of Pharmaceutical Sciences,Tiruchirappalli-21

ABSTRACT

Respiratory diseases pose a significant threat to human health worldwide, and a clear understanding of their underlying mechanisms and therapeutic strategies is essential for improving prevention and treatment outcomes. Recent research has highlighted ferroptosis, a form of regulated cell death characterized by iron accumulation and lipid peroxidation, as an important contributor to the development and progression of various respiratory diseases. This review summarizes current evidence on the involvement of ferroptosis in respiratory disorders and explores the therapeutic potential of herbal compounds in targeting this pathway. A comprehensive analysis of recent studies reveals that ferroptosis plays a critical role in respiratory tissue injury and inflammation, while herbal compounds demonstrate distinct advantages due to their multi-target, low-toxicity, and regulatory properties. These compounds can modulate key signaling pathways associated with ferroptosis, thereby alleviating disease progression and enhancing cellular protection. Overall, herbal compounds show considerable promise in the prevention and treatment of respiratory diseases through the regulation of ferroptosis. Identifying specific bioactive compounds and effective ferroptosis inhibitors will be crucial for developing innovative and targeted therapeutic strategies. This review underscores the potential value of herbal-based interventions as novel approaches for combating respiratory diseases by modulating ferroptosis-related mechanisms.

Keywords: Respiratory diseases; Ferroptosis; herbal compounds; prevention and treatment.

SCIENTIFIC VALIDATION OF *SOOSIKA CHOORANAM* WITH PHASEWISE ADJUVANTS IN POLYCYSTIC OVARIAN DISEASE: AN INTEGRATED IN-VITRO, IN-VIVO AND ULTRASONOGRAPHIC CLINICAL CASE EVALUATION

G. Sanjana [1], U. Chitra[2], K. Sudhamathi Pushparaj[3]

1 PG Scholar, Department of PG Pothu Maruthuvam, GSMC, Chennai – 106, 2Lecturer, Department of PG Pothu Maruthuvam, GSMC, Chennai -106, 3 Head of the Department, Department of PG Pothu Maruthuvam, GSMC, Chennai – 106.

ABSTRACT

Background: PCOD is marked by anovulation, hormonal imbalance, insulin resistance, and inflammation. Siddha medicine uniquely employs therapeutic strategies through cycle-specific adjuvants (anupanam). *Soosika Chooranam* (SC) contains seven metabolically active herbs- *Mukia maderaspatana, Alternanthera sessilis, Phyla nodiflora, Gossypium hirsutum, Vigna radiata, Cuminum cyminum*, administered with day-wise adjuvants: rice-wash water (follicular phase), Cyperus decoction (periovulatory phase), buttermilk (luteal phase), and warm water (premenstrual phase), addressing PCOD's multifactorial pathophysiology. **Aim:** To evaluate SC through standardisation, phytochemical profiling, in-vitro bioactivity, invivo toxicity, ovulation-inducing activity, LH modulation, and ultrasonographic clinical outcome. **Methods:** SC was standardised per PLIM/WHO guidelines with GC–MS analysis. In-vitro antidiabetic (α-amylase, α-glucosidase inhibition) and anti-inflammatory activities were assessed. Toxicity studies and ovulation-inducing activity with ovarian histopathology were performed in rats. LH levels were estimated via ELISA. Clinical efficacy was documented through pelvic ultrasonography pre- and post-treatment. **Results:** GC–MS revealed benzaldehyde, n-hexadecanoic acid, and squalene. SC showed significant enzyme inhibition (α-amylase IC_{50}: 114.86 µg/mL; α-glucosidase IC_{50}: 142.75 µg/mL) and anti-inflammatory activity. Toxicity studies confirmed safety. Ovulation studies demonstrated restored ovarian architecture with reduced cystic follicles. LH ELISA showed marked optical density reduction at 450 nm, indicating LH surge suppression and HPO axis modulation. Clinical ultrasonography revealed complete resolution of polycystic morphology. **Conclusion:** *Soosika Chooranam* with phase-synchronised adjuvants represents a validated, safe therapeutic protocol addressing insulin resistance, inflammation, and hormonal dysregulation in PCOD.

EVIDENCE-BASED INSIGHTS INTO SIDDHA HERBAL FORMULATIONS SUPPORTING WOMEN'S WELLNESS.

Haniya Thahseena U[1*], Dr. V. Kavitha[2]

[1*]Postgraduate scholar, Department of Nutrition and Dietetics, Jamal Mohamed College, Tiruchirappalli- 20.

[2] Mentor, Head of the Department, Department of Nutrition and Dietetics, Jamal Mohamed College, Tiruchirappalli- 20.

ABSTRACT

The growing interest in natural and preventive healthcare has renewed attention toward traditional medical systems, including Siddha medicine, which places strong emphasis on diet, lifestyle, and herbal nutrition in the maintenance of health. Women's health, shaped by hormonal changes, nutritional requirements, and lifestyle-related stressors, demands supportive approaches that are holistic, safe, and suitable for long-term use. Within the Siddha system, herbal nutrition has traditionally played a crucial role in supporting digestion, metabolism, immunity, and reproductive well-being. However, in the context of modern healthcare, the relevance and wider acceptance of these practices depend on scientific interpretation and evidence-based validation. This presentation examines the rationale for herbal nutrition in women's health through the perspective of evidence-based Siddha, highlighting how traditional knowledge can be strengthened through contemporary nutritional science. Key concepts such as functional nutrition, nutrient bioavailability, safety, and preventive health are explored to explain the potential of herbal-based nutritional strategies in supporting women's wellness. Emphasis is placed on bridging classical Siddha principles with modern research methodologies to ensure efficacy, standardization, and broader applicability. By positioning Siddha nutrition as a complementary and supportive approach rather than an alternative, this presentation reflects the ongoing renaissance of traditional medicine through modern scientific frameworks and its potential contribution to sustainable, women-centric healthcare models.

KEYWORDS: Women's health, herbal nutrition, traditional wisdom, evidence-based validation, functional nutrition, nutrient bioavailability, preventive healthcare

EVIDENCE-BASED SIDDHA: EXPLORING HERBAL PATHWAYS FOR MODERN PREVENTIVE HEALTH

Haripriya Ravichandran[1]*, JP. Jayasri[2]

[1]*Postgraduate Scholar, Department of Nutrition and Dietetics, Jamal Mohamed College, Trichy-20.

[2]Mentor, Assistant Professor, Department of Nutrition and Dietetics, Jamal Mohamed College, Trichy-20.

ABSTRACT

Siddha medicine, one of India's oldest healing systems, emphasizes the close link between food, herbs, and overall wellbeing. Many plants traditionally used to balance the body and ease respiratory discomfort continue to show relevance today, as air pollution and lifestyle factors contribute to rising respiratory concerns. Emerging research now validates what Siddha practitioners have long observed these herbs possess notable antioxidant, anti-inflammatory, and immune-supporting properties. Such findings provide a scientific basis for understanding their mechanisms of action and strengthen the credibility of Siddha practices within preventive healthcare. Viewing these traditional herbs through a modern nutritional lens allows their therapeutic potential to be explored in evidence-based ways. Integrating them into daily diets or functional nutrition approaches could offer practical, natural strategies to reduce disease risk and enhance resilience. Bridging ancient herbal knowledge with contemporary scientific insight not only preserves traditional wisdom but also reshapes it to meet present-day health needs. This evidence-oriented perspective reflects how Siddha medicine can continue to evolve as a valuable component of holistic, preventive wellness.

Keywords: Siddha medicine, herbal nutrition, respiratory wellness, preventive health

A REVIEW ON COMPARATIVE EVALUATION OF PHARMACOPOEIAL STANDARDS OF GLYCYRRIZHA GLABRA (ATHIMATHURAM)

G.Arthi[1], S.Vadivelan [2], B.Sharmila devi[3],M.Ganaga Priya[4],K.P.Kannan[5]

1.Assistant professor,Department of Noi Anuga Vidhi Olukam including ResearchMethodology,Sir Issac Newton Siddha Medical College and Hospital,Nagapattinam.

2.Head of the Department, Department of Noi Anuga Vidhi Olukam including ResearchMethodology,Sir Issac Newton Siddha Medical College and Hospital,Nagapattinam

3.Resident Medical officer, Sir Issac Newton Siddha Medical College and Hospital,Nagapattinam.

4. Resident Medical officer, Sir Issac Newton Siddha Medical College and Hospital,Nagapattinam.

5.Principal,Sir Issac Newton Siddha Medical College and Hospital,Nagapattinam.

ABSTRACT

Siddha system is an ancient Indian traditional medicine system. In Siddha ,medicines are made up of Herbals, Metals and Minerals. Glycyrrizha glabra is a widely used herbal drug with diverse pharmacological activities. Glycyrrizha glabra is commonly known as sweet root ,which is used as a single herbal formulation and also as Polyherbal formulations like chooranam (Powder formation) and Mathirai(Tablet).In this review, we provide a detailed comparative assessment of Pharmacopeial standards reowned by various Pharmacopoeias including Indian Pharmacopoeia (IP) ,United States Pharmacopoeia (USP) , European Pharmacopoiea (EP) and British Pharmacopoeia (BP). Chromatographic profile, Physicochemical parameter ,Macroscopic and Microscopic features are all included in the article. The study highlights the similarities and differences in the standards, ensuring the quality of Glycyrrizha glabra.Ultimately our objective is to safeguard consumer health and enhance the efficacy of Glycyrizha glabra based medicines. This review serves as a essential source for those involved in the regulation and production of Herbals products.

Key words: Glycyrrizha glabra, Siddha, Sweet root, Pharmacopoeias.

UTILISATION OF METALS AND MINERALS IN SIDDHA SYSTEM OF MEDICINE

R. Senthamarai, S. Karthiyayini*, S. Shakila Banu, C. Vijayalakshmi

Department of Pharmacognosy, Periyar College of Pharmaceutical Sciences, Tiruchirappali, Tamilnadu-620021.

ABSTRACT

The Siddha system of medicine is one of the unique and ancient traditional medical systems of India, predominantly practiced in Tamilnadu. It is based on the fundamental principles of balance among the three humors namely Vata, Pitta and Kapha, along with the concept of 96 Thathuvam. Apart from herbal drugs, Siddha medicines makes extensive use of metals and minerals owing to their potent therapeutic action, minimal requirements and long shelf life. Metals and minerals are classified as Ulogam and Karasaram and are used in the preparation of formulations such as Parpam, Chenduram, Chunnam and Pathangam. Prior to therapeutic application, these substances undergo systematic purification processes known as Suddi, trituration and incineration methods called Pudam, which are intended to remove toxic and enhance bioavailability. Property processed Siddha metal and mineral formulations are administered in minimal doses and are considered effective for chronic, antiviral and immunomodulatory diseases. In modern scientific characterization, the Siddha system of medicine are conforms with SEM, TEM, XRD and ICP-OES. The utilisation of metals and minerals reflects the advanced pharmaceutical knowledge of ancient Siddha scholars. This abstract highlights the classification, preparation methods, therapeutic significance, and therapeutic nano technology are related to the utilisation of metals and minerals in Siddha system of medicine. Scientific validation, standardization, and quality control studies are necessary to ensure safety, efficacy, and global acceptance of Siddha metal and mineral based formulations in modern healthcare systems and integrative medical research worldwide.

KEYWORDS:

Siddha system of medicine; Metals and minerals; Ulogankal; Karasaram; Parpam; Chenduram; Traditional medicine; Modern scientific characterization.

STANDARDIZATION OF *TARENNA ASIATICA* (L.) KUNTZE LEAF: A PHARMACOGNOSTIC APPROACH

R. Senthamarai, A. Jasima Banu*, K. R Suriyaprabha, S. Shakila Banu,
Department of Pharmacognosy, Periyar College of Pharmaceutical Sciences,
Tiruchirappalli, Tamil Nadu - 620 021
jasimabanu.as@gmail.com

ABSTRACT

Traditional recognition of *Tarenna asiatica* (L.) Kuntze for its medicinal properties necessitates robust pharmacognostic standards for quality assurance. This study undertakes a comprehensive pharmacognostic evaluation of its leaf, providing essential data for botanical identification and standardization. Detailed macroscopic, microscopic (including transverse sections of petiole and lamina, and powder analysis), and physicochemical analyses were performed. Characteristic anatomical features, such as unicellular trichomes, distinct vascular bundles, paracytic stomata, and calcium oxalate crystals, were observed, alongside quantitative parameters like vein islet and stomatal numbers. Physicochemical values, including total ash (9.21%) and moisture content (4.28%), further complement the profile. The established pharmacognostic parameters will serve as a vital tool for the reliable authentication, quality control, and detection of adulteration of *Tarenna asiatica* leaf in herbal drug preparations.

Key words: *Tarenna asiatica*, Powder analysis, Microscopic, Macroscopic, Quality control.

E-POSTER

SIDDHA COSMECEUTICALS – SCIENTIFIC INSIGHTS AND MARKET POTENTIAL

Janani.B[*1], Umadevi[2]

Vels Institute of Science, Technology and Advanced Studies Pallavaram, Chennai

Corresponding author: aumadevi.sps@vistas.ac.in

ABSTRACT

SIDDHA COSMECEUTICALS: A Fusion of Ancient Wisdom and Modern Science. Siddha cosmeceuticals represent the fusion of ancient Tamil medicinal wisdom with modern skincare science. These formulations leverage unique herbal-mineral preparations to provide therapeutic and aesthetic benefits, supported by a growing framework of scientific validation and market demand. Siddha cosmeceuticals represent a rapidly emerging segment that bridges ancient Tamil traditional medicine with modern skincare science. While currently smaller than the global Ayurveda market, the Siddha sector is benefiting from a 10.85% CAGR in the Indian personal care and cosmeceutical category, projected to reach significant valuation by 2030. This presentation explores the scientific basis behind Siddha cosmeceuticals, highlighting key herbal ingredients such as Aloe vera, Turmeric, Vetiver, Amla, Neem, and Kayakalpa formulations, which have demonstrated potent anti-aging, antioxidant, antimicrobial, and skin-repair properties in various studies. The integration of modern analytical tools like HPTLC and GC-MS has further validated the bioactive compounds in these traditional remedies. The global market for herbal and natural cosmetics is expected to grow substantially, offering immense potential for Siddha-based products. With increasing consumer preference for clean, plant-based skincare, Siddha formulations present a unique opportunity for commercialization, both in domestic and international markets.

CONCLUTION: Siddha cosmeceuticals, backed by evidence and innovation, can play a pivotal role in the herbal beauty industry, representing a renaissance of ancient knowledge through modern science.

IOT WEARABLES IN SIDDHA DIAGNOSIS: A TECHNOLOGICAL REVIEW

Tasnim N*[1], Dr.V.Jayashree[2]

[1*]B.Pharm student, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai

[2]Associate Professor, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai

Corresponding Author: Dr.V.Jayashree

Corresponding mail ID: jeya.sps@vistas.ac.in

ABSTRACT

IoT-enabled wearable devices offer a modern platform for monitoring health and diagnosing conditions based on Siddha principles. Wearable sensors (pulse, temperature, motion) transmit data to cloud platforms, and AI/ML interprets signals in line with Siddha parameters. It works by matching dosha parameters to sensor outcomes. It helps in preventive care, remote monitoring of vitals, especially for elderly patients, personalized treatment according to their diagnosis with signal detection, and telemedicine, which reduces the need for hospital visits. It works by wireless data transmission using Bluetooth, Wi-Fi, MQTT, or cellular. It can be processed by edge or cloud computing. It can be reviewed using mobile applications or webpages for continuous monitoring. It especially replaces wrist-based measurements with Sensorbased wrist measurements and automated health prediction. AIML, when used with the devices, helps in pattern recognition and detects the disease early. Although it has several advantages with high-accuracy data and modernized treatment, it also has challenges like data privacy concerns of patients, always needing internet connections, power consumption, interoperability, and scalability. Through continuous research and advanced AI models, these challenges can also be reduced, making these wearables available in the market for advanced diagnosis.

KEYWORDS: MQTT, wearable sensors, remote access, sensor-based wrist monitoring

SMART SYNERGY: AI IN SIDDHA-ALLOPATHY HERBAL-DRUG INTERACTIONS- A REVIEW

Mohamed Fahid[1], M.Manoyogambiga*

[1]B.Pharm student, School of Pharmaceutical Sciences, VISTAS, Chennai

*Department of Pharmaceutics, School of Pharmaceutical Sciences, VISTAS, Chennai

Corresponding Author: M. Manoyogambiga

Corresponding mail ID: manoyogambiga.sps@vistas.ac.in

ABSTRACT

Despite the widespread use of Siddha herbal formulations and allopathic medicines being available, systematic evidence on their potential herb–drug interactions remains limited. Around 16% are using both siddha and allopathy without informing the doctor, which may lead to serious conditions. Drug interactions are mainly of two types: pharmacodynamic and pharmacokinetic. Data-driven models, algorithms, and predictive tools help in integrating clinical, pharmacological, and herbal constituent information, especially for early detection and pattern recognition. There are some misconceptions that herbals are always safe, which may possess a risk of synergistic, antagonistic, or pharmacokinetic interactions. Antibiotics, anticonvulsants, oral hypoglycemics often show synergetic effects. Cytochrome P450 (CYP450) enzyme is the main enzyme that helps to metabolize many allopathic drugs, but most of the herbs either induce or inhibit these enzymes, which can alter their effect. To reduce the herb-drug interaction, the mechanisms of herbs and drugs must be studied, structured pharmacovigilance systems should be developed, more laboratories and clinical setups for continuous research of siddha formulations, and awareness must be spread among patients about their concerns.

KEYWORDS: Cytochrome P450, pharmacokinetic, pharmacodynamic, synergetic effects

CLINICAL OUTCOME MAPPING OF SIDDHA REGIMENS IN GESTATIONAL DIABETES MELLITUS USING MODERN BIOMARKERS

Tejaswini Rah Raman* [1] , Dr.V. Jayashree [2] *
B.Pharm student, Department of Pharmacology, School of Pharmaceutical Sciences,
Associate Professor, Department of Pharmacology, School of Pharmaceutical Sciences,
VISTAS, Chennai
E-Mail id: jeya.sps@vistas.ac.in

ABSTRACT

Gestational Diabetes Mellitus is a metabolic disorder characterized by glucose intolerance with its primary symptoms or first recognition during pregnancy, usually in the first or second trimester for most mothers. It represents a significant clinical concern due to the various effects it has on the maternal glycemic status and pregnancy outcomes. Siddha medicine has for ages been a traditional practice, which has addressed pregnancy-related metabolic incidences through a sequence of therapeutic regimens that focus on internal medications, dietary discipline, and lifestyle changes to adhere to the gestational state. In certain populations, siddha-based management remains the preferred approach during pregnancy due to its individualized nature and trusted clinical use, which has been passed down through generations. The current study maps the outcomes of such siddha regimens, specifically in pregnant women with Gestational Diabetes Mellitus, using modern biomarkers. The primary outcome measures include fasting blood glucose, post-prandial blood glucose, and oral glucose tolerance test values, while the glycated hemoglobin and weight changes during pregnancy were recorded as supportive indicators. Clinical outcome mapping was done to systematically record changes in these biomarkers and segregate glycemic control throughout the treatment course. The application of modern biomarkers enables an objective and reproducible assessment of metabolic status during pregnancy, where subjective clinical indicators are often limited. This profound and structured approach enables the evaluation of these traditional Siddha regimens using modern diagnostic standards of assessment without altering the traditional systematic approach. This study aims to further investigate findings that support the structured clinical evaluation of Siddha regimens in gestational diabetes mellitus using modern, standardized biomedical outcomes.

KEY WORDS : Gestational Diabetes Mellitus, Siddha regimens, Traditional medicine, Modern Biomarkers, Pregnancy, Metabolism.

Advanced Analytical Techniques for Validation of Siddha Medicines: Bridging Tradition with Modern Science: A Systematic Review

S.Akkshatha, Malarkodi Velraj, P Shanmugasundaram

B.Pharmacy V SEM, School of Pharmaceutical Sciences, VISTAS, Tamilnadu, India-600117.

ABSTRACT

Siddha medicine is an ancient system of medicine with a wide presence in healthcare practices for different diseases. Inspite of its long term use, scientific validation and quality assurance remains essential for its acceptance in modern healthcare. The complexity of siddha formulations such as polyherbal and oil based which makes their standardization difficult and challenging. Recent studies have also proved the significance of advanced analytical techniques in validating traditional siddha medicines while preserving their traditional essence. In this review, the research articles that employed modern analytical techniques for the assessment of siddha formulations were considered. In these articles, in order to identify and analyze phytochemical constituents of classical siddha preparations including Amukkara churanam, kabasura kudineer and siddha tailams, advanced methods such as High-Performance Thin-Layer Chromatography(HPTLC) and Gas Chromatography-Mass Spectrometry(GC-MS).These techniques were employed for phytochemical profiling, fingerprint development and identification of chemical constituents. The reviewed studies showed that HPTLC is efficient in producing distinctive fingerprint profiles that allow for batch-to-batch consistency and authentication of siddha formulations. Several bioactive compounds found in herbal and oil-based preparations were identified more easily thanks to GCMS analysis. When taken as a whole, these studies demonstrate the dependability of sophisticated analytical techniques in assisting with siddha drug quality control and standardization. Sophisticated analytical methods like GC-MS and HPTLC are essential for connecting traditional Siddha knowledge with contemporary scientific validation. By guaranteeing authenticity, quality, and reproducibility, their application enhances evidence-based Siddha research and supports the incorporation of Siddha medicine into modern healthcare systems.

Keywords: Siddha medicine, Quality assurance, standardization, Scientific validation, HPTLC.

“Siddha Medicine in PCOS: An Evidence-Based Review”

Dharshini S*[1], Dr.V.Jayashree[2]

[1*]B.Pharm student, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS,

[2]Associate Professor, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai

Corresponding Author: Dr.V.Jayashree , Corresponding mail ID: jeya.sps@vistas.ac.in

ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age and is increasing due to sedentary lifestyle, unhealthy diet, and stress. It leads to menstrual irregularities, weight gain, infertility, and hormonal imbalance, making it an important public health concern. In Siddha medicine, PCOS is understood as a condition caused by imbalance of *Vali*, *Azhal*, and *Iyam*, and treatment focuses on correcting the root cause rather than only symptoms. This abstract reviews evidence-based Siddha approaches in the management of PCOS based on published clinical trials, observational studies, and review articles. Studies report improvement in menstrual regularity, reduction in body weight, better hormonal balance, and improved metabolic parameters with Siddha medicines, dietary regulation, yoga, and lifestyle modification. Minimal adverse effects and good patient compliance were also noted. Siddha medicine emphasizes long-term lifestyle correction and preventive care, which are essential for sustained management of PCOS. Integrating evidencebased Siddha practices with modern healthcare can improve clinical outcomes and strengthen women’s health at both individual and public health levels.

Keywords:

Polycystic Ovary Syndrome (PCOS), Siddha Medicine, Evidence-Based Practice, Lifestyle Modification, Women’s Health.

The Double Helix of Healing: Documenting the Synergy of Siddha Supportive Care and Targeted Allopathy in Multiple Myeloma

Authors: Aanu.G.S*, Jaganath.S

School of Pharmaceutical science, VISTAS, Pallavaram

Corresponding author email id: aanugs2005@gmail.com

ABSTRACT

Multiple Myeloma (MM) is a plasma cell malignancy associated with anemia, bone destruction, renal impairment, immune dysfunction, and recurrent infections. Although targeted allopathic therapies have improved survival, treatment-related toxicities often compromise quality of life. Integrative strategies that enhance treatment tolerance and patient well-being are therefore essential.Siddha medicine, an ancient system emphasizing individualized care, immune modulation, detoxification, and rejuvenation, was employed as supportive therapy alongside standard targeted allopathic treatment in patients with Multiple Myeloma. Selected Siddha formulations were administered to improve immunity, reduce inflammation, and mitigate therapy-induced adverse effects such as fatigue, neuropathy, cytopenias, and gastrointestinal disturbances.Clinical observations revealed improved tolerance to targeted therapy, reduced frequency of infections, stabilization of hematological parameters, and enhanced performance status without interference with conventional treatment. The integrative “double helix” approach highlights the complementary roles of traditional Siddha medicine and modern oncology in delivering holistic cancer care.These findings support the potential of evidence-based Siddha supportive care as a safe and effective adjunct in Multiple Myeloma management and underscore the need for further clinical studies to validate integrative oncology models.

KEYWORDS: Multiple Myeloma, Siddha Medicine, Integrative Oncology, Targeted Therapy, Supportive Care, Quality of Life

MOLECULAR MECHANISMS OF NEUROPROTECTION BY SIDDHA MEDICINAL HERBS: TRANSLATIONAL INSIGHTS FOR MODERN NEUROTHERAPEUTICS

M.P.Hema Prabha*, Ramya.A

1. B.Pharmacy, V Sem , School of Pharmaceutical sciences, Vels Institute of Science Technology and Advanced Studies.
2. Assistant Professor, Department of Pharmacology, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies

Mail ID: prabhamp2004@gmail.com

ABSTRACT

Neurodegenerative disorders, including Alzheimer's disease and Parkinson's disease, are characterized by progressive neuronal loss, oxidative stress, neuroinflammation, protein misfolding, and mitochondrial dysfunction. Most of the contemporary neurotherapeutics offer symptomatic relief and are limited by single-target action with adverse effects. Siddha medicine is an ancient traditional medicinal system that utilizes multi-component, multitarget therapeutic potential medicinal herbs. Recent molecular pharmacology advances have given scientific validation for neuroprotective effects of several Siddha herbs, which were exerted through well-defined cellular and molecular mechanisms. They include antioxidant defense through Nrf2 signalling, attenuation of neuroinflammation by NF-κB inhibition, modulation of apoptotic pathways, reduction of protein aggregation, and regulation of neurotransmitters. The translational research approaches, including reverse pharmacology, molecular docking, and preclinical disease models, have further strengthened the relevance of Siddha herbs in the development of modern neurotherapeutics. The review outlines the molecular mechanisms of neuroprotection afforded by Siddha medicinal herbs and explores the translational possibilities for developing safer, multi-targeted neurotherapeutics. Integration of Siddha medicine with modern pharmaceutical research may result in the development of novel disease-modifying strategies for neurodegenerative disorders.

KEY WORDS: Neurotherpeutics, Apoptosis, Neurodegenerative disorders, Neuroprotective effect, Translation.

Evidence-Based Siddha Medicinal Herbs in Neurodegenerative Disorders.

V.Hari doss*, Dr.S.Uma Devi

1. B.Pharmacy,* V Sem , School of Pharmaceutical sciences, Vels Institute of Science Technology and Advanced Studies.
2. Assistant Professor, Department of pharmaceutics, School of Pharmaceutical Sciences, Vels Institute of Science Technology and Advanced Studies

Email: Haridassh547@gmail.com

ABSTRACT

Siddha medicine, one of the ancient traditional medical systems of South India, includes several medicinal herbs used for maintaining brain health and treating neurological disorders. This abstract reviews the evidence-based potential of Siddha medicinal herbs in the management of neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease, and other cognitive impairments. Experimental studies indicate that many Siddha herbs exhibit significant neuroprotective properties through antioxidant, anti-inflammatory, anti-apoptotic, and cholinesterase inhibitory mechanisms. These actions help reduce oxidative stress, neuroinflammation, and neuronal degeneration, which are key pathological features of neurodegenerative diseases. Preclinical studies using cell lines and animal models show promising results in improving memory, motor function, and neuronal survival. However, clinical evidence remains limited due to small sample sizes, lack of standardization, and insufficient safety data. Strengthening scientific validation through well-designed clinical trials, standardization of herbal formulations, and integration with modern biomedical research is essential. Evidence-based Siddha herbs may serve as valuable complementary therapies in neurodegenerative disorder management.

KEY WORDS:

Neurodegenerative disorders, Medicinal herbs, Neuroprotection, Alzheimer's disease, Parkinson's disease.

A Comparativer Study of early detection of lung cancer using Artificial intelegence and Machine learning Algorithms

Navas Khan, Razya Sulthana Beevi[2], Gowri Krishnaperumal*

Department of Pharmacology, SRM College of Pharmacy, Faculty of Medicine and Health Sciences,

SRM Institute of Science and Technology, Kattankulathur- 603203, Chengalpattu, Tamil Nadu.

ABSTRACT

Lung cancer remains one of the leading causes of cancer-related mortality worldwide due to late-stage diagnosis and limited early symptoms. Early detection is crucial for improving treatment effectiveness and patient survival rates. With the increasing availability of clinical data, machine learning techniques have emerged as effective tools for supporting early disease diagnosis through accurate and efficient data analysis.This study presents a comparative analysis of supervised machine learning algorithms for early lung cancer detection using structured clinical datasets. Three independent datasets were utilized, comprising 999 patient records with 23 features, 309 patient records with 15 features, and 680 patient records with 68 features, respectively. Data preprocessing steps, including data cleaning, normalization, feature selection, and feature extraction, were applied to enhance data quality and improve model performance.Several supervised classification algorithms were implemented and evaluated, namely K-Nearest Neighbors (KNN), Support Vector Machine (SVM), Gaussian Naive Bayes, Random Forest (RF), and Linear Discriminant Analysis (LDA). The models were trained and tested using standard evaluation metrics such as accuracy, precision, recall, F1-score, confusion matrix, receiver operating characteristic (ROC) curve, and area under the curve (AUC), ensuring a comprehensive performance comparison.The objective of this research is to identify the most effective machine learning model for early lung cancer prediction. Experimental results indicate that the Random Forest classifier outperforms all other evaluated models across the datasets, achieving a classification accuracy of 100%. This demonstrates its robustness and high predictive capability. The findings highlight the potential of Random Forest as a reliable decision-support system for early lung cancer detection and emphasize the importance of machine learning techniques in enhancing diagnostic accuracy and supporting clinical decision-making.

Keywords: Machine learning, algorithms, Area Under the curve, Robustness, clinical data

Anti-Parkinson Activity of the root extract of Berberi Cretical on Rotenone-Induced Parkinsonism Mice Model

Mathew Samson.S [1], Abishek.B [2] , Deimaiami Passah [3], Gowri Krishnaperumal*

Department of Pharmacology, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science and Technology, Kattankulathur – 603203, Chengalpattu, Tamil Nadu.

ABSTRACT

Parkinson's disease (PD) is the second most common age-related neurodegenerative disorder and is characterized by the progressive loss of dopaminergic neurons. The exact causes of Parkinson's disease (PD) are still unknown, however oxidative stress, excessive production of free radicals, and mitochondrial malfunction are thought to be important factors. A key factor in the pathophysiology of Parkinson's disease is the substantia nigra's mitochondrial complex I dysfunction. Because it may replicate the clinical, biochemical, and behavioral characteristics of Parkinsonism, rotenone, a mitochondrial complex I inhibitor, is frequently employed to cause the disease in experiments. The research findings the neuroprotective potential of aporphine alkaloids, specifically magnoflorine (MFN), which was extracted from Berberis cretica L. root extract, against rotenoneinduced Parkinsonism in mice. Exposure to rotenone resulted in significant motor deficits, such as catalepsy, stiffness, flexed posture, and decreased motility. The open field test, hanging wire test, and catalepsy test were used to evaluate behavioral changes. Significant neuronal damage caused by rotenone was further verified by histopathological studies. Dopamine levels and antioxidant enzymes including catalase and superoxide dismutase (SOD) were significantly reduced in rotenone-treated animals, according to biochemical research. Low, medium, and high dosages of MFN therapy enhanced behavioral performance and restored metabolic markers; the highest effect was shown at the high dose. The results show that MFN has important neuroprotective qualities. To validate its therapeutic promise in Parkinson's disease and associated neurodegenerative illnesses, more preclinical research is necessary.

Keywords: Parkinson Diseases(PD), Berberis cretica L, Magnoflorine(MFN), Aporphine alkaloid, Rotenone, Dopamine, Catalepsy, SOD, Catalase.

FORMULATION AND EVALUATION OF HERBAL TRANSDERMAL PATCHES OF *BAUHINIA TOMENTOSA* Linn (ETHANOLIC EXTRACT) TO STUDY ANTI-INFLAMMATORY ACTIVITY.

D. Ramana*, M. Shantha, Dr. R. Senthamarai,

Periyar college of Pharmaceutical Sciences, Trichy - 21

ABSTRACT

The present study focuses on the formulation and evaluation of herbal transdermal patches containing the ethanolic extract of *Bauhinia tomentosa* Linn. to investigate its antiinflammatory activity. Transdermal drug delivery systems provide controlled drug release, improved patient compliance, and avoidance of first-pass metabolism, making them suitable for chronic inflammatory conditions. The ethanolic extract of *Bauhinia tomentosa* Linn., known for its traditional anti-inflammatory properties, was prepared and incorporated into transdermal patches using the solvent casting method. Polymers such as hydroxypropyl methylcellulose and ethyl cellulose were used along with suitable plasticizers and penetration enhancers.The prepared patches were evaluated for physicochemical parameters including thickness, weight variation, folding endurance, tensile strength, moisture content, moisture uptake, and drug content uniformity. The results showed that the formulated transdermal patches exhibited good mechanical properties, uniform drug content, and sustained release of the extract. The optimized formulation demonstrated significant anti-inflammatory activity and remained stable under accelerated storage conditions. The study concludes that transdermal patches of *Bauhinia tomentosa* Linn. ethanolic extract are a promising herbal delivery system for the management of inflammatory conditions.

Key Words: Bauhinia tomentosa, ethanolic extract, transdermal patches, anti-inflammatory activity.

FORMULATION AND EVALUATION OF ANTHELMINTIC GEL OF ETHANOLIC LEAF EXTRACT OF ABRUS PRECATORIUS LINN.

S. Bharathraj*[1], Mrs. M. Shantha[1], Dr. R. Senthamarai[1]

Department of Pharmacognosy, Periyar College of Pharmaceutical Sciences, Trichy – 21.

ABSTRACT

Plant-based anthelmintic compounds continue to be of interest as synthetic medicine substitutes because helminthic diseases continue to be a major public health concern, especially in underdeveloped nations. Using *Pheretima posthuma* as an experimental model, the current study assessed the anthelmintic activity of an aqueous extract made from *Abrus precatorius* Linn leaves. Fresh leaves were gathered, verified, dried in the shade, and then extracted using distilled water. By timing how long it took for earthworms to become paralyzed and die at various extract concentrations, the anthelmintic activity was evaluated in vitro. The standard reference medication for comparison was albendazole. Higher concentrations of the aqueous leaf extract produced noticeably shorter paralysis and death periods than lower concentrations, demonstrating a dose-dependent anthelmintic action. The inclusion of phytoconstituents such tannins, flavonoids, and saponins—which are known to disrupt helminth energy metabolism and neuromuscular action—may be the cause of the observed behavior. The results of this study indicate that the aqueous extract of *Abrus precatorius* leaves has considerable anthelmintic potential and support the traditional usage of these leaves in the treatment of helminthic illnesses. To identify the active ingredients and assess the extract's safety and effectiveness through in vivo and clinical studies, more research is necessary.

Keywords: *Pheretima posthuma*; aqueous extract; medicinal herbs; *Abrus precatorius* Linn; anthelmintic action

CHITOSAN-BASED FORMULATIONS: A VERSATILE BIOPOLYMER DRIVING MODERN DRUG DELIVERY

Hemasurya J*, Gomathi AR
Vellalar College of Pharmacy, Thindal, Erode - 638012
EMAIL:hemasurya11204@gmail.com

ABSTRACT

INTRODUCTION: Chitosan (CS) is a hemi-synthetic cationic linear polysaccharide found to be non-toxic, highly biocompatible, and biodegradable, and it has a low immunogenicity. Chitosan is used in various studies to develop carriers to deliver medical formulations. The versatility of chitosan is evident in its film-forming ability, controlled swelling behaviour, and high surface area, which make it suitable for various drug such as nanoparticles, microparticles, hydrogels, and membranes. **FORMULATION APPROACHES:** The various formulations developed with the use of chitosan biopolymer: **NANOFORMULATIONS:** In recent years, nanocarrier-based drug delivery systems have become increasingly popular and Colloidal nanocarriers prepared from chitosan shows better results to produce desired effect on target site. **HYDROGELS:** Hydrogels have been prepared from biopolymers such as cellulose and chitosan by crosslynking with selected synthetic polymers resulting in improved mechanical, biological, and physicochemical properties. They were useful for skin regeneration and wound healing. **BUCCAL FILMS:** Chitosan and cellulose based films made with acetic acid have been found to be more advantageous in terms of oral pH, while films made with lactic acid are more advantageous in terms of flexibility and mucoadhesion. **SPRAY FORMULATIONS:** Producing sprayable products on the mask to prevent the spread of viral and bacterial infections by it's antimicrobial properties by developing formulation with silver and copper nanoparticles. **MICRO RNA CARRIERS:** Being cationic, chitosan can easily form particles with anionic polymers to encapsulate microRNA or even complex readily forming polyplexes. However, fine tuning of chitosan characteristics is necessary for a successful formulation. **CONCLUSION:** Chitosan-based materials acquire variety of properties, such as increased regeneration and healing, accompanied by anti-inflammatory and antibacterial properties. However, as a natural polymer, chitosan lacks sufficient mechanical strength and electrical conductivity and has a high degradation rate. Improving the mucoadhesion properties and biological interactions of chitosan with it's stability and solubility can be accomplished by functionalizing amino and hydroxyl.

KEY WORDS: Chitosan, biopolymer, mucoadhesion, nanoparticles.

RECENT ADVANCEMENTS IN THE DIAGNOSIS AND TREATMENT OF MOUTH ULCERS

Anusha K, Gomathi AR
Vellalar College of Pharmacy, Thindal, Erode- 638012.
EMAIL: anushaanusha71336@gmail.com

ABSTRACT

Mouth ulcers, also known as aphthous ulcers, are among the most common disorders affecting the oral mucosa, with a reported prevalence of approximately 5–25% of the population worldwide. These lesions primarily occur on non-keratinized areas of the oral cavity, including the inner cheeks, lips, tongue, and floor of the mouth. Mouth ulcers are typically painful and recurrent, causing discomfort that interferes with eating, speaking, and overall quality of life. Although often self-limiting, their high prevalence and impact make them a significant oral health concern. **ETIOLOGY AND PATHOPHYSIOLOGY:** The etiology of mouth ulcers is multifactorial and not completely understood. Several contributing factors have been identified, including nutritional deficiencies, psychological stress, local trauma, infections, systemic diseases, and drug-induced reactions. Pathophysiologically, these factors lead to epithelial disruption, immune-mediated inflammation, and increased release of inflammatory mediators. This results in mucosal breakdown, ulcer formation, pain, and delayed healing. **DEVELOPED AND NOVEL FORMULATIONS:** Recent advancements in the treatment of mouth ulcers emphasize localized and patient-friendly drug delivery systems to enhance therapeutic efficacy and compliance. Developed formulations such as mucoadhesive gels and films, buccal patches and tablets, corticosteroid-loaded bioadhesive systems, anesthetic preparations, and herbal formulations improve outcomes by prolonging drug contact at the ulcer site. Additionally, novel delivery systems based on bioactive polymers like chitosan and hyaluronic acid, as well as nanoparticle- and liposome-based carriers, provide controlled drug release, reduce inflammation, enhance tissue regeneration, and accelerate healing. **CONCLUSION:** Despite significant progress, conventional therapies still dominate clinical practice and are limited by short duration of action and potential side effects. Future research should focus on advanced, targeted, and personalized oral drug delivery systems that offer sustained action, improved safety, and better patient compliance. Such innovations hold promise for improving long-term management and prevention of mouth ulcers.

MACHINE LEARNING APPROACHES FOR PREDICTING PHARMACOLOGICAL ACTIVITY OF SIDDHA FORMULATIONS

Gayathri Abiraami K[*1] Durkesh B P[1] Rufus Jebakumar S P[1] Stella Robertson [2]

*1 Pharma student, College of Pharmacy, Jaya College of Paramedical Sciences, Affiliated to the Tamil Nadu Dr. MGR Medical University, Thiruninravur-602024.

2 Professor, College of Pharmacy, Jaya College of Paramedical Sciences, Affiliated to the Tamil Nadu Dr. MGR Medical University, Thiruninravur-602024.

ABSTRACT

Siddha medicine is a traditional system with extensive use of polyherbal formulations for the management of various diseases. Despite long-standing clinical usage,scientific validation of pharmacological activities remains limited due to the complexity of multi-component formulations. Recent advancements in artificial intelligence, particularly machine learning (ML), provide promising tools for predicting pharmacological activities and accelerating evidence-based validation of traditional medicines. This study explores the application of machine learning approaches to predict the pharmacological potential of Siddha formulations based on phytochemical composition and reported biological activities. Data on selected Siddha formulations and their phytoconstituents were collected from classical Siddha texts and validated scientific databases. Molecular descriptors and biological activity data were curated and used to develop predictive ML models using algorithms such as Random Forest, Support Vector Machine, and Decision Tree classifiers. The models demonstrated significant accuracy in predicting pharmacological activities including anti-inflammatory, antioxidant, and antidiabetic potentials. Feature importance analysis highlighted key phytochemical attributes contributing to biological activity. The findings suggest that ML-based prediction can serve as a rapid, cost-effective, and reliable approach for prioritizing Siddha formulations for further experimental and clinical validation. This study highlights the integration of traditional Siddha knowledge with modern computational techniques, supporting the development of evidence-based Siddha medicine. Machine learning tools can play a crucial role in bridging the gap between traditional therapeutic claims and scientific validation.

EVALUATION OF ANTIMICROBIAL ACTIVITY OF *CLITORIA TERNATEA* – ALCOHOL BASED HAND RUB

Sangavi Y*, Rajesh C, K. Sakthivel, Senthamarai R,

Periyar College of Pharmaceutical Sciences, Trichy – 21.

ABSTRACT

INTRODUCTION: Alcohol-based hand rub became very important during COVID-19. However, many commercial products contain synthetic chemicals like hydrogen peroxide, quaternary ammonium compounds and phenols that can irritate the skin, respiratory system and harm aquatic life. These problems have boosted the demand for natural and non-toxic hand rub. **AIM:** To develop an effective alcohol-based hand rub incorporating *Clitoria ternatea* flower extract with environment friendly antimicrobial activity. **METHODOLOGY:** Extraction of *Clitoria ternatea* flowers were done using 70% ethanol in Soxhlet apparatus for 6 hours. Preliminary phytochemical screening was done to identify classes of bioactive compounds with antimicrobial activity present in the extract. Disc diffusion method was used to determine the antimicrobial activity. Formulation is to be done based on the formula provided by WHO. **RESULTS AND DISSCUSION:** The extract contain anthocyanin, flavonoids, tannins, saponins and cyclotides which corresponds to antimicrobial activity. A significant antimicrobial activity was obtained. **CONCLUSION:** The above findings indicate that *Clitoria ternatea* flowers possess a promising antimicrobial potential. Thus *Clitoria ternatea* flower extract can be used to make a natural, safe, and effective hand rub. This new product is a natural alternative to the harsher chemical hand rub currently on the market.

KEYWORDS: Alcohol based hand rub, Antimicrobial activity, *Clitoria ternatea*, 70% alcohol.

Review of Citra Mutti Oil in the effective management of Insomnia

P Kanimozhi [1], S B Dharani[1],Dr. P Sathish[2]

[1]-Third Professional year BSMS Government Siddha Medical College Palayamkottai

[2]-Reader Government Siddha Medical College Palayamkottai

Email id: kanimozhik2k@gmail.com, sbdmedico@gmail.com

ABSTRACT

Insomnia (Thookaminmai Noi) is a common sleep disorder characterized by difficulty in initiating or maintaining sleep, resulting in poor sleep quality and impaired daytime functioning. In the Siddha system of medicine, sleep disturbances are mainly attributed to derangement of Vali humour. The present study was undertaken to scientifically evaluate the safety and therapeutic efficacy of a Siddha formulation, Citra Mutti Oil (CM Oil), in the management of insomnia. The study Integrated classical Siddha principles with modern analytical and pharmacological evaluation in accordance with AYUSH and WHO guidelines. Siddha parameters and organoleptic characters of the formulation were assessed as per classical literature. Phytochemical screening revealed the presence of bioactive constituents, particularly phytol, which are known to modulate neurotransmitter activity and exhibit anxiolytic and sleep-promoting effects. Insomnia (Thookaminmai Noi) occurs predominantly due to derangement of Vali kutram, often associated with the involvement of Azhal kutram. Siramutti oil, when applied externally, helps in samanpaduthal (normalization) of the deranged Vali and Azhal kutrams. The formulation exhibits Vali adakkum and Manasai amaithipaduthal properties, thereby reducing anxiety and promoting natural sleep. The results demonstrated that CM Oil is safe, effective, and well tolerated, with significant improvement in sleep quality and reduction in anxiety-related symptoms. This study provides scientific validation of the Siddha formulation CM Oil and supports its role as a complementary therapeutic option in the management of insomnia (Thookaminmai Noi).

Keywords:

Insomnia, Thookaminmai Noi, Citra Mutti Oil, Dearrangement Vali and Azhal Kutram, Anxiolytic Activity

INVESTIGATING THE ANTISILAGOGUE POTENTIAL OF CROTALARIA RETUSA

C. Nivitha*, S. Shakila Banu, C. Vijayalakshmi, R. Senthamarai,
Periyar College of Pharmaceutical Sciences Trichy – 620021.

ABSTRACT

Crotalaria retusa Linn (Fabaceae) is a medicinal plant traditionally used for ailments such as fever, cough, and stomatitis. Phytochemical studies reveal the presence of alkaloids, flavonoids, tannins,sterols, and polyphenols, which contribute to its reported pharmacological activities,including antibacterial, antioxidant, hypoglycemic, and anti-inflammatory effects. Despite its traditional use and bioactive profile, the antisialogogue potential (ability to reduce salivary secretion) of Crotalaria retusa has not been investigated. Astringent compounds and alkaloids in the plant suggest a possible role in modulating secretions, yet no experimental evidence currently exists. This review highlights the phytochemistry, pharmacology, and traditional uses of Crotalaria retusa and emphasizes the research gap regarding its potential antisialogogue activity, proposing the need for targeted pharmacological studies to explore this effect.

A POTENT NATURAL AGENT FOR LIVER HEALTH AND REGENERATION (ECLIPTA PROSTARATA)

K.Shahina Begum*, S. Shakila Banu, C. Vijayalakshmi, R. Senthamarai,
Periyar College of Pharmaceutical Sciences, Trichy – 620021.

ABSTRACT

The present study evaluates the anti-inflammatory potential of the methanolic extract of leaves of Eclipta prostrata Linn. (Family: Asteraceae), a medicinal plant widely used in traditional systems of medicine. The methanolic extract was prepared and administered orally to albino Wistar rats at doses of 100 and 200 mg/kg. Anti-inflammatory activity was assessed using carrageenan-induced rat paw oedema and egg-white-induced hind paw oedema models.The findings support the traditional use of Eclipta prostrata in the treatment of inflammatory conditions of liver and suggest that the methanolic leaf extract possesses significant anti inflammatory activity, possibly through inhibition of inflammatory mediators such as histamine, serotonin, and prostaglandins. Further studies are warranted to isolate and characterize the active constituents responsible for this activity.

EVALUATING THE LOCAL ANESTHETIC POTENTIAL OF SYZYGIUM AROMATICUM OIL IN PAIN MANAGEMENT

D.Saketha*, S. Shakila Banu, C. Vijayalakshmi, R. Senthamarai,

Periyar College of Pharmaceutical Sciences, Trichy – 620021.

ABSTRACT

This study intends to extract and identify the eugenol from Syzgium aromaticum and evaluate its analgesic effects in laboratory animals and clinically in volunteer patients suffering from toothaches. Materials and methods include direct stem distillation was used to extract eugenol from cloves, followed by chemical extractions. The extracted products were identified by thin-layer chromatography (TLC) and 1H NMR spectroscopy, and tested clinically in 51 volunteer patients suffered from acute toothache. Those patients was divided into 3 equal groups: patients of the first (control) group (G1) was given the hydroxypropyl methylcellulose (HPMC) gel mixed with distilled water — placebo; patients of the second group (G2) received the prepared clove gel —eugenol previously extracted (2% in HPMC); patients of the third group (G3) received commercial .“Orajel” containing benzocaine 10%. The patients were advised to apply a small amount of gel. The size of a chickpea into the tooth cavity or the toothache area. Results; Eugenol was extracted as bright yellow oil (about 2.02 g, 5% recovery) with a solid particular clove smell from the clove. TLC revealed various Rf value spots ranging between 0.6 and 0.9. The 1H NMR spectroscopy showed various analysis data, including 3.28—3.32 (3H), 5.5 (1H, C=C—H), 5.9 (aromatic 2H), and 6.6 (aromatics). All patients in G1 exhibited continuous toothache pain. In contrast, within G2 and G3, 14 (82%) and 15 (88%) of subjects, respectively, reported a reduction in toothache intensity within a 5-minute timeframe. The majority of patients in both G2 and G3, 13 (76%) and 12 (71%) patients, respectively, experienced a duration of pain relief of 72 hours. Conclusion; Clove-extracted products are as effective as benzocaine when used as intraoral topical anesthesia. The authors recommend future studies to investigate the analgesic effects mechanism of clove extract.

Key words: clove, eugenol, Syzgium aromaticum, toothaches, topica

THE POTENTIAL OF BUCHANJA LANZAN AS A NATURAL ANTISILAGOGUE

J. Jemima Ruby*, S. Shakila Banu, C. Vijayalakshmi, R. Senthamarai,
Periyar College of Pharmaceutical Sciences, Trichy- 620021.

ABSTRACT

Buchanania lanzan (commonly known as chironji or charoli) is an indigenous medicinal tree widely used in traditional Indian medicine and as a dietary component. Various parts of the plant, including seeds, leaves, bark and gum, are rich in bioactive phytoconstituents such as flavonoids, tannins, phenolic compounds, alkaloids and glycosides. These constituents are known to exhibit diverse pharmacological properties including antioxidant, anti-inflammatory, antimicrobial, wound-healing and hepatoprotective activities. The presence of tannins and other astringent compounds provides a scientific rationale for exploring the potential antisialogogue activity of Buchanania lanzan, as such compounds may reduce salivary secretion through protein-precipitating and secretory gland-modulating mechanisms. However, a review of the available literature reveals a lack of direct experimental or clinical studies evaluating its effect on salivary flow. This review highlights the phytochemical profile and pharmacological properties of Buchanania lanzan relevant to antisialogogue activity and emphasizes the need for systematic preclinical and clinical investigations to validate its efficacy, safety and mechanism of action as a natural antisialogogue.

THE MUTI- FACETED HEALTH BENEFITS OF ASWAGANDHA

M.Sonali*, S. Shakila Banu, C. Vijayalakshmi, R. Senthamarai,
Periyar College of Pharmaceutical Sciences, Trichy- 620021.

ABSTRACT

Ashwagandha (*Withania somnifera*) is a prominent medicinal herb widely used in traditional Ayurvedic medicine for its diverse therapeutic properties. It is best known for its adaptogenic effect, helping the body cope with stress by regulating cortisol levels and enhancing mental resilience. Ashwagandha exhibits significant neuroprotective benefits, including reduction of anxiety, improvement of mood, and enhancement of cognitive functions such as memory and attention. It also contributes to physical health by increasing muscle strength, endurance, and overall vitality. Furthermore, the herb possesses immunomodulatory, antioxidant, and anti-inflammatory activities that support immune defense and reduce oxidative stress. Ashwagandha also aids in hormonal regulation, promoting thyroid function and reproductive health. Collectively, these multi-faceted health benefits highlight Ashwagandha as a valuable natural agent for promoting holistic physical and mental well-being.

FORMULATION AND EVALUATION OF ANTHELMINTIC SYRUP OF ETHANOLIC LEAF EXTRACT OF *ABRUS PRECATORIUS* LINN.

M. Revathi*, M. Shantha, Dr. R. Senthamarai,

Periyar College of Pharmaceutical Sciences, Trichy – 21.

ABSTRACT

The present study focuses on the formulation and evaluation of an herbal anthelmintic syrup prepared using the ethanolic leaf extract of *Abrus precatorius* Linn., a medicinal plant traditionally used for treating various ailments. The leaves were collected, shade-dried, powdered, and subjected to successive solvent extraction using petroleum ether, chloroform, ethyl acetate, and ethanol through Soxhlet extraction. Preliminary phytochemical analysis of the ethanolic extract revealed the presence of alkaloids, flavonoids, saponins, carbohydrates, phytosterols and gums, indicating its potential biological activity. The extract was incorporated into a medicated syrup along with sucrose, sodium benzoate, citric acid, sweetening and flavouring agents. The formulated syrup was evaluated for pH, viscosity, organoleptic properties, visual clarity, and crystal growth, all of which confirmed its stability and acceptability. Anthelmintic activity was assessed using adult earthworms (*Pheretima posthuma*) at concentrations of 5, 10, and 15 mg/mL and compared with standard Albendazole. The ethanolic extract showed significant dose-dependent activity, with the 15 mg/mL concentration producing the shortest paralysis and death times. Overall, the results support the traditional use of *Abrus precatorius* and demonstrate that the formulated herbal syrup possesses promising anthelmintic potential, making it a suitable natural alternative for worm infestations.

KEYWORDS: Abrus precatorius, anthelmintic syrup, Herbal syrup, Earthworm model.

Study of Gleicheniaceae truncata extracts for Anti-Amnesic effect mediated through inhinition of GSK3 against scopalamine induced mice model

Shaik Ameer Basha[1], Abhishek Shahaji[2], Gowri Krishnaperumal*

Department of Pharmacology, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science and Technology, Kattankulathur – 603203, Chengalpattu, Tamil Nadu.

ABSTRACT

Amnesia is a neurodegenerative disorder affecting 17–25 million elderly people worldwide. In spite of the remarkable increase in scientific knowledge about the pathophysiology of amnesia disease, attempts other than modifying the cholinergic neurotransmission have proved futile. Because of non-availability of proper curative therapy for amnesia, the present study has been undertaken to evaluate the possible role of Gleicheniaceae truncata in experimental amnesia in mice. Amnesia in mice was induced by intraperitoneal administration of scopolamine (1 mg/kg). Various behavioral tests and biochemical analyses were performed to explore the possible role of hydroalcoholic extract of Gleicheniaceae truncata (HEGT)(50, 100 and 250 mg/kg doses). Gleicheniaceae truncata exhibited anxiolytic activity in elevated plus maze (EPM) test. In the water maze test, Gleicheniaceae truncata pretreatment improved spatial learning. Hydroalcoholic extract of Gleicheniaceae truncata significantly reduced acetylcholinesterase activity. Hyperphosphorylation of GSK-3β is inhibited by the phenolic compounds present in Gleicheniaceae truncata. Hence, it protects against the formation of neurofibrillary tangles and amyloid plaques. Hydroalcoholic extract of Gleicheniaceae truncata also showed a significant increase in superoxide dismutase, glutathione peroxidase, and reduced glutathione activities. Hence, hydroalcoholic extract of Gleicheniaceae truncata might be effective in clinical amnesia and Alzheimer's disease by virtue of its cognition enhancement and anti-anxiety properties.

Keywords: Amnesia, GSK-3, Amnesia disease, Gleicheniaceae truncata, Inhibition of GSK-3.

A REVIEW ON THE CONCEPT OF NANOTECHNOLOGY IN SIDDHA MEDICINE WITH SPECIAL REFERENCE TO HERBO-MINERAL FORMULATION

Lakshmi Priya T , Dr. M. Thirumal*, Dr R. Kamaraj
Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.
Email: lakshmipriya25t@gmail.com

INTRODUCTION

The Siddha system of medicine is one of the oldest traditional medical systems, well known for its extensive use of herbo-mineral formulations. Drugs prepared from plants, metals, minerals and animal sources undergo repeated purification and processing steps. These traditional procedures result in significant reduction of particle size and alteration of chemical composition, which enhances bioavailability and minimizes toxicity. Several classical Siddha preparations such as Parpam, Chenduram, Chunnam and Kattu are now scientifically recognized as nano-sized formulations, even though the concept of nanotechnology emerged much later in modern science.

MATERIALS AND METHODS

The Siddha herbo-mineral formulations discussed in this study include Parpam, Chenduram, Chunnam, Kattu and related preparations described in Siddha literature. These medicines are prepared using metals, minerals and herbal materials, which undergo purification, trituration with herbal juices and repeated calcination as per classical Siddha methods. The processed formulations were analyzed using modern analytical techniques to determine particle size and physicochemical characteristics. Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) were used to study particle morphology and size. Dynamic Light Scattering (DLS) was employed to confirm the presence of nanoparticles. X-ray Diffraction (XRD) was used to identify crystalline nature, while Fourier Transform Infrared Spectroscopy (FTIR) and Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) were used to analyze chemical composition and elemental content.

S.No	Siddha Formulation	Major Raw Material	Analytical Technique Used	Purpose of Analysis
1	Linga Chenduram	Mercury sulphide	SEM, TEM, DLS, XRD	Particle size and morphology
2	Poorna Chandrodayam	Mercury, sulphur, gold	SEM, ICP-OES, XRD	Elemental composition
3	Velli Parpam	Silver	SEM, DLS	Nano-particle confirmation
4	Thanga Parpam	Gold	TEM, XRD	Size and crystalline nature
5	Naga Parpam	Zinc	XRD, DLS	Zinc oxide particle analysis
6	Chara Parpam	Ammonium Chloride	SEM, TEM	Morphological study

EXPERIMENTAL WORK

Earlier experimental studies on Siddha herbo-mineral formulations such as Linga Chenduram, Poorna Chandrodayam, Velli Parpam, Thanga Parpam, Naga Parpam and Chara Parpam were evaluated. These preparations involve repeated purification, grinding with herbal juices, drying and calcination at controlled temperatures using traditional methods. The experimental observations from SEM and TEM analysis revealed irregular to spherical shaped particles with smooth surfaces, indicating formation of ultra-fine particles. Dynamic Light Scattering studies confirmed the presence of nanoparticles along with micro-sized particles, suggesting non-uniform particle size distribution. XRD analysis demonstrated the crystalline nature of metal oxides and sulfides present in the formulations, while ICP-OES confirmed elemental composition. These experimental findings validate that traditional Siddha preparation methods effectively convert raw materials into stable nano-structured therapeutic agents.

RESULTS AND DISCUSSION

Analytical studies reveal that many Siddha medicines contain particles below 100 nm, along with micro-sized fractions. Mercury-based preparations predominantly contain mercuric sulfide nanoparticles, which exhibit reduced toxicity compared to elemental mercury. Gold-based formulations show antioxidant and immunomodulatory properties, while silver and zinc preparations demonstrate antimicrobial activity. The coexistence of nano and micro particles may contribute to controlled drug release and reduced adverse effects. Traditional preparation techniques appear to play a crucial role in stabilizing nanoparticles and enhancing therapeutic efficacy.

CONCLUSION

Siddha medicine demonstrates an advanced understanding of nano-scale drug preparation through traditional methods. Although nanotechnology is a recent scientific discipline, Siddha formulations represent an economical and effective form of nanomedicine practiced for centuries. Further scientific validation and standardization of these formulations are essential to support their global acceptance and safe clinical application.

REFERENCES

1. Kandasamy Pillai N. *History of Siddha Medicine*. 2nd ed. Chennai: Department of Indian Medicine and Homoeopathy; 1998.
2. Surendiran A, Sandhiya S, Pradhan SC, Adithan C. Novel applications of nanotechnology in medicine. *Indian J Med Res*. 2009;130:689–701.
3. Medina C, Santos-Martinez MJ, Radomski A, Corrigan OI, Radomski MW. Nanoparticles: pharmacological and toxicological significance. *Br J Pharmacol*. 2007;150(5):552–558.
4. Arun Sudha, Murthy VS, Chandra TS. Standardization of metal-based herbal medicines. *Am J Infect Dis*. 2009;5(3):200–206.

MACHINE LEARNING APPROACHES FOR PREDICTING PHARMACOLOGICAL ACTIVITY OF SIDDHA FORMULATIONS

Gayathri Abiraami K*1 Durkesh B P1 Rufus Jebakumar S P1 Stella Robertson 2

*1 Pharma student, College of Pharmacy, Jaya College of Paramedical Sciences, Affiliated to the Tamil Nadu Dr. MGR Medical University, Thiruninravur-602024.

2 Professor, College of Pharmacy, Jaya College of Paramedical Sciences, Affiliated to the Tamil Nadu Dr. MGR Medical University, Thiruninravur-602024.

Introduction:

Siddha medicine is one of the oldest traditional systems of medicine, widely practiced in South India, and is based on the use of herbal, mineral, and herbo-mineral formulations for the treatment of various chronic and acute diseases. Siddha formulations are known for their multi-component nature and broad pharmacological actions, including antiinflammatory, antioxidant, antimicrobial, antidiabetic, and hepatoprotective effects. However, scientific validation and systematic screening of these formulations remain challenging due to their complex composition, lack of standardized datasets, and the timeconsuming nature of experimental studies.With recent advancements in artificial intelligence, machine learning (ML) has emerged as a powerful tool for drug discovery and pharmacological prediction. ML algorithms can analyze large datasets, identify hidden patterns, and predict biological activities based on chemical and phytochemical features. Integrating ML techniques with traditional medicine offers a promising approach to accelerate the scientific validation of Siddha formulations and prioritize candidates for experimental and clinical studies.This study aims to explore machine learning approaches for predicting the pharmacological activity of Siddha formulations using phytochemical and bioactivity-related features. By applying and comparing different ML models, this work demonstrates the potential of computational methods to support evidence-based Siddha drug development.

Materials and Methods:

Data Collection

Data related to Siddha formulations were collected from published literature, traditional Siddha pharmacopoeias, and publicly available phytochemical databases. The dataset included formation on herbal ingredients, known phytochemical constituents, and reported pharmacological activities such as anti-inflammatory, antioxidant, antimicrobial, and antidiabetic effects.

Feature Extraction

Phytochemical features such as the presence of alkaloids, flavonoids, phenolics, terpenoids, glycosides, and tannins were encoded as input variables. Additional features included formulation type, number of herbal components, and reported therapeutic indications. Data preprocessing involved handling missing values, normalization, and categorical encoding.

Machine Learning Models

Multiple supervised machine learning algorithms were implemented and evaluated, including:

*Decision Tree

*Random Forest

*Support Vector Machine (SVM)

*Logistic Regression

The dataset was divided into training and testing sets using an 80:20 ratio. Model training was performed using standard classification techniques.

Model Evaluation

Model performance was evaluated using accuracy, precision, recall, F1-score, and confusion matrix analysis. Cross-validation was applied to ensure model robustness and reduce overfitting.

Experimental Work Done

The experimental workflow involved dataset preparation, feature selection, model training, and performance evaluation. After preprocessing, the dataset was subjected to feature importance analysis to identify key phytochemical contributors to pharmacological activity. Each ML model was trained separately, and hyperparameters were optimized where applicable. Random Forest models were constructed using multiple decision trees to improve predictive accuracy and reduce bias. The trained models were then tested on unseen data to evaluate their generalization capability.

Comparative analysis was conducted to identify the best-performing algorithm for pharmacological activity prediction.

Results and Discussion

Among the tested models, the Random Forest algorithm demonstrated superior predictive performance compared to other classifiers. It achieved higher accuracy and better balance between precision and recall for multiple pharmacological activity classes. The ensemble nature of Random Forest enabled effective handling of complex, non-linear relationships present in multi-component Siddha formulations.Feature importance analysis revealed that phytochemical constituents such as flavonoids, phenolic compounds, and alkaloids played a significant role in predicting anti-inflammatory and antioxidant activities. Terpenoids and glycosides were strongly associated with antimicrobial and antidiabetic predictions.Support Vector Machine and Logistic Regression models showed moderate performance but were less effective in capturing complex interactions among multiple phytochemicals. Decision Tree models provided interpretability but were prone to overfitting.The findings highlight the potential of ML-based screening as a cost-effective and time-saving approach to prioritize Siddha formulations for experimental validation. This computational strategy can complement traditional knowledge and laboratory studies, bridging the gap between ancient medicine and modern drug discovery.

Conclusion

This study demonstrates the successful application of machine learning techniques for predicting the pharmacological activity of Siddha formulations. Among the evaluated models, Random Forest exhibited the highest predictive performance, effectively identifying key phytochemical features associated with various therapeutic activities.The integration of ML approaches with traditional Siddha medicine provides a promising framework for systematic drug screening, validation, and prioritization. Future work may include expanding datasets, incorporating molecular descriptors, and validating predictions through in vitro and in vivo studies to enhance clinical relevance.

References

1. Ekins, S.(2019). Machine learning in drug discovery: Applications and challenges. Drug Discovery Today
2. Mohanraj, K., et al. (2018). Phytochemical profiling and pharmacological potential of Siddha medicinal plants. Journal of Ethnopharmacology.
3. Breiman, L. (2001). Random forests. Machine Learning.
4. Bishop, C. M. (2006). Pattern Recognition and Machine Learning. Springer.
5. Patwardhan, B., et al. (2020). Traditional medicine and modern drug discovery. Current Science.

SIDDHA MEDICINE AND MODERN NEUROSCIENCE: EXPLORING AN INTEGRATIVE, NON-INVASIVE APPROACH TO NEUROLOGICAL CARE

Bhujithra M, Dr. M. Thirumal*, Dr R. Kamaraj
Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.
Email: bhujimohanavel02@gmail.com

INTRODUCTION

Neurological disorders represent a major global health burden, accounting for approximately 3% of the total disease burden worldwide, with conditions such as dementia, Parkinson's disease, epilepsy, multiple sclerosis, and headache disorders contributing significantly [1]. These disorders encompass a wide spectrum of congenital, neurodevelopmental, degenerative, immunological, infectious, traumatic, and neoplastic conditions affecting the central nervous system, with marked heterogeneity in etiology, clinical presentation, and prognosis [2]. While some neurological disorders are preventable or manageable, many lead to lifelong disability or high mortality, placing substantial strain on healthcare systems globally [3]. In this context, Siddha medicine offers a holistic, cost-effective, and non-invasive therapeutic framework that integrates internal herbal formulations and external therapies to restore humoral balance particularly Vata support tissue regeneration, and promote neurological health. Traditional Siddha practices, including yoga, meditation, sound therapy, and physical exercises, have been reported to enhance synaptic plasticity and cognitive function, highlighting the need for systematic scientific evaluation of their neuromodulatory and neuroprotective potential and their integration with modern neurological care.

SIDDHA SYSTEM OF MEDICINE

The Siddha system offers rejuvenating, rehabilitative, promotive, personalized, and preventive care through a holistic approach that integrates medical and yogic practice, iatrochemistry, and philosophical wisdom addressing intellectual, psychological, physical, and physiological dimensions [4]. Grounded in theories of five elements (Aimpootham), three humoral forces (Mukkuttram), and eight diagnostic methods (Envakai Thervukal), it employs divine (metal- and mineral-based), rational (herbal), and surgical (procedural) treatment modalities, alongside non-invasive therapies such as yoga, meditation, varmam (acupuncture-like therapy), massage (thokkanam), and sound therapy. Traditional practice gradually progresses from herbal to combined herbal metal formulations, with classical texts describing detoxification procedures for mercury and other metals intended to enhance immune function and repair mechanisms, although robust large-scale clinical evidence particularly for metal-based treatments in neurological disorders remains limited [5].

NEUROPROTECTIVE EFFECTS OF SIDDHA HERBS

Many siddha herbs studied for their neuroprotective, anti-inflammatory and anti-oxidant property and neuromodulatory which efficient in managing the neurodegenerative diseases, other neurological conditions, which is due to presence of various phytochemicals like alkaloids, glycosides, and polyphenols in Siddha herbs [6].

NEUROMODULATORY EFFECT ON NON-INVASIVE INTERVENTIONS OF SIDDHA SYSTEM

Non-invasive Siddha-based external therapies, including Varmam, thokkanam, ottradam, oil baths, nasyam, yoga, and meditation, have been reported to improve brain health by stimulating

vital points and peripheral nerves, resulting in neuromodulation and relief of neuropsychiatric symptoms. Case reports indicate that Varmam therapy, alone or combined with internal Siddha medicines, reduces insomnia and migraine, while Nada yoga alleviates mental and emotional disturbances. Yoga practices involving asanas, pranayama, and meditation improve cognition, motor control, balance, and quality of life, particularly in Parkinson's disease. These effects are associated with autonomic regulation, vagal nerve activation, modulation of neurotransmitters (e.g., GABA and serotonin), and promotion of neurogenesis and synaptic plasticity. However, the lack of longitudinal studies and mechanistic clarity highlights the need for rigorous research to validate these therapies and support their integration into modern neurological care.

CONCLUSION

Based on the available preclinical and clinical evidence, Siddha-based internal and external therapies appear to support neuroplasticity and improve quality of life in individuals with neurological disorders. These findings highlight the potential of integrating traditional Siddha practices with modern neuroscience as a complementary approach to neurological disease management. Future investigations should prioritize elucidating the underlying neuroprotective and neuromodulatory mechanisms of Siddha interventions using advanced neuroimaging techniques and validated biomarkers. Furthermore, well-designed, large-scale clinical trials are required to rigorously evaluate their efficacy, safety, and compatibility with conventional neurological treatments. The development of standardized therapeutic protocols and long-term longitudinal studies will be critical to determining sustained clinical benefits and facilitating the integration of Siddha medicine into multidisciplinary neurological care frameworks.

References

1. Thakur, K. T., Albanese, E., Giannakopoulos, P., Jette, N., Linde, M., Prince, M. J., ... & Dua, T. (2016). Neurological disorders.
2. Feigin, V. L., Nichols, E., Alam, T., Bannick, M. S., Beghi, E., Blake, N., ... & Fischer, F. (2019). Global, regional, and national burden of neurological disorders, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Neurology*, *18*(5), 459-480.
3. Ningrum, D. N. A., & Kung, W. M. (2023). Challenges and perspectives of neurological disorders. *Brain Sciences*, *13*(4), 676.
4. Rizvi, S. A., Einstein, G. P., Tulp, O. L., Sainvil, F., & Branly, R. (2022). Introduction to traditional medicine and their role in prevention and treatment of emerging and re-emerging diseases. *Biomolecules*, *12*(10), 1442.
5. Thas, J. J. (2008). Siddha medicine—background and principles and the application for skin diseases. *Clinics in dermatology*, *26*(1), 62-78.
6. Kadiyala M, Ponnusankar S, Elango K (2014) Screening of Siddha medicinal plants for its in-vitro acetylcholinesterase and butyryl cholinesterase inhibitory activity. Pharmacogn Mag 10(Suppl 2):S294–S298.

Comparative Anticancer Efficacy of Siddha Formulations on Human Oral Cancer (KB) Cell Line

Kuberan M[1], Dr.M.Thirumal[1]*,Dr.R.Kamaraj[1]
[1]Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.
Email: kuberanadhitiya@gmail.com (Presenting Author)

Introduction

Oral cancer is one of the most prevalent malignancies in India and poses a major public health challenge due to late diagnosis, high recurrence, and adverse effects associated with conventional chemotherapy. Chemotherapeutic drugs, although effective, are costly and often produce severe side effects. This has led to increased interest in traditional systems of medicine such as Siddha, which utilize plant-based and herbo-mineral formulations. MahaVallathy Leghiyam (MVL) and Neeradi Muthu Vallathy Leghiyam (NMVL) are classical Siddha formulations traditionally used for chronic ailments. However, their anticancer potential has not been scientifically validated. The present study evaluates and compares the in-vitro anticancer activity of MVL and NMVL against human oral cancer KB cell lines.

Materials and Methods

MVL and NMVL were obtained from Indian Medical Practitioners Co-operative Pharmacy and Stores Ltd. (IMPCOPS), Chennai. Human oral cancer KB cell lines were procured from NCCS, Pune. Cell culture media (DMEM), fetal bovine serum (FBS), antibiotics, MTT reagent, DMSO, propidium iodide (PI), acridine orange (AO), and ethidium bromide (EB) were used.

Preparation of Extracts

Solubility studies confirmed that both formulations were soluble in water. Aqueous extracts were prepared freshly and filtered before use for experimental studies.

Cell Culture

KB cells were cultured in DMEM supplemented with 10% FBS and antibiotics and maintained at 37°C in a humidified atmosphere containing 5% CO_2. Cells were sub-cultured regularly to maintain exponential growth.

Cell Proliferation Assay (MTT Assay)

KB cells were seeded in 24-well plates and treated with varying concentrations of MVL and NMVL for 24 and 48 hours. After incubation, MTT reagent was added and formazan crystals formed were dissolved using DMSO. Absorbance was measured at 570 nm, and the IC_{50} values were determined. Percentage cell viability was calculated relative to untreated control cells.

Morphological Analysis

Morphological changes in treated and untreated cells were observed using an inverted phase-contrast microscope to identify features such as cell shrinkage, membrane blebbing, and loss of adherence.

Apoptosis Assessment

- Propidium iodide staining was used to evaluate nuclear condensation and DNA fragmentation.
- AO/EB dual staining was performed to distinguish viable, early apoptotic, late apoptotic, and necrotic cells based on fluorescence characteristics.

Results and Discussion

MTT assay results demonstrated a significant dose- and time-dependent decrease in KB cell viability following treatment with both MVL and NMVL. The IC_{50} value for MVL was observed at 3.25 mg/mL, whereas NMVL exhibited a lower IC_{50} value of 1.25 mg/mL, indicating stronger cytotoxic activity at lower concentrations. Morphological observations revealed classical apoptotic changes such as cell rounding, membrane blebbing, chromatin condensation, and formation of apoptotic bodies in treated cells. These changes were more pronounced in NMVL-treated cells compared to MVL. PI staining confirmed increased nuclear fragmentation and chromatin condensation in treated cells, while AO/EB staining showed a higher proportion of early and late apoptotic cells in NMVL-treated groups. The enhanced anticancer activity of NMVL may be attributed to its bioactive phytoconstituents and herbo-mineral components, which may induce apoptosis through oxidative stress and intrinsic apoptotic pathways. These findings support the traditional claims of Siddha medicine and highlight the importance of scientific validation of indigenous formulations.

Conclusion

The present study demonstrates that both MVL and NMVL possess significant in-vitro anticancer activity against KB oral cancer cells. NMVL exhibited superior efficacy at lower concentrations, inducing pronounced apoptotic changes. These results suggest that Siddha formulations, particularly NMVL, may serve as promising adjuvant or alternative therapeutic agents for oral cancer. Further in-vivo and molecular studies are required to validate their clinical potential.

References

1.Coelho KR. Challenges of oral cancer burden in India. J Cancer Epidemiol. 2012.
2. Markopoulos AK. Current aspects of oral squamous cell carcinoma. Open Dent J. 2012.
3. Safadi FF et al. Cell proliferation and differentiation studies. J Cell Physiol. 2003.
4. Reed JC. Mechanisms of apoptosis. Am J Pathol. 2000.
5. Elmore S. Apoptosis: A review. Toxicol Pathol. 2007.

EVIDENCE-BASED STANDARDIZATION AND PHARMACOLOGICAL VALIDATION OF SIDDHA HERBAL MEDICINES IN SKIN DISORDERS AND WOUND HEALING

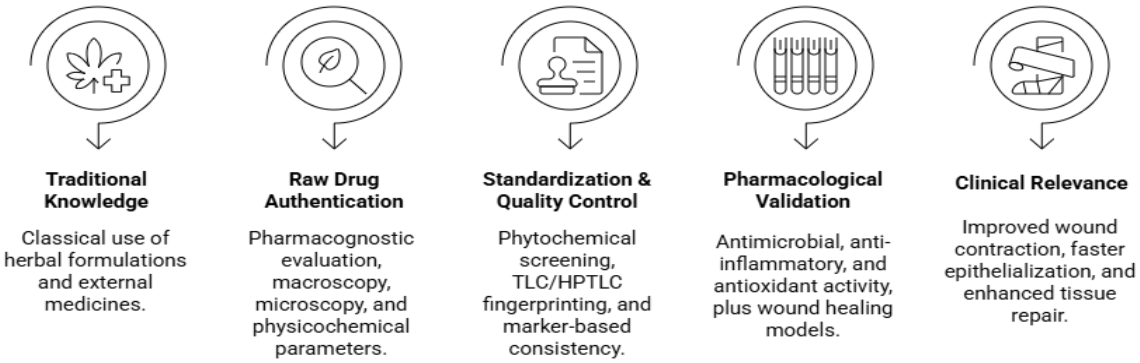
Srilakshmi S [1], Thirumal.M[1], Kamaraj R[1]
[1]Department of Pharmacognosy, SRM College of Pharmacy, Faculty of Medicine and Health Sciences, SRM Institute of Science & Technology, SRM Nagar, Kattankulathur 603203, Kanchipuram, Chennai, Tamil Nadu, India.
srisowji2003@gmail.com

INTRODUCTION

Skin disorders and impaired wound healing remain significant clinical challenges due to infection, inflammation, oxidative stress, and delayed tissue repair. Chronic wounds and burns increase healthcare burden and reduce quality of life. The Siddha system of medicine traditionally employs herbal and herbo-mineral formulations, particularly external dosage forms such as *tailam* and *poochu*, for treating skin diseases and wounds. However, limited standardization, reproducibility, and pharmacological validation restrict wider scientific acceptance. Integrating traditional Siddha knowledge with modern analytical and experimental approaches is essential for establishing evidence-based credibility.

MATERIALS & METHODS

A narrative literature review was conducted using Google Scholar and PubMed. Peer-reviewed research articles, review papers, and guideline documents related to Siddha medicine, skin disorders, wound healing, and herbal drug standardization were analyzed. Studies emphasizing pharmacognostic evaluation, physicochemical and phytochemical analysis, chromatographic techniques (TLC, HPTLC, GC–MS), and in vitro and in vivo wound-healing models were included and critically synthesized.



RESULTS & DISCUSSION

The reviewed studies demonstrate that Siddha herbal medicines undergo pharmacognostic authentication, physicochemical evaluation, and phytochemical screening to ensure quality. Analytical techniques such as HPTLC and GC–MS provide reproducible chemical fingerprints for quality control. Pharmacological investigations report antimicrobial, anti-inflammatory, antioxidant, and wound-healing activities using excision and incision wound models, showing improved wound contraction, epithelialization, tensile strength, and collagen content. These findings indicate that standardization is central to reproducible pharmacological activity and bridges traditional Siddha formulations with modern quality-control requirements. However, most evidence remains preclinical, and formulation variability and limited clinical trials continue to restrict translational acceptance.

CONCLUSION

Siddha herbal medicines exhibit promising potential in managing skin disorders and wound healing when supported by systematic standardization and pharmacological validation. Application of modern analytical tools and experimental models strengthens reproducibility,

safety, and scientific credibility, supporting the rational integration of Siddha medicine into contemporary dermatological practice.

REFERENCES

1. Senthilnathan, S., Jayaraman, S., Veeraraghavan, V.P., Khan, J.M., Ahmed, M.Z., Ahmad, A. and Gnanamani, A., 2023. HPTLC and GC–MS finger-printing of two potential multifunctional siddha tailams: Mathan and maha megarajanga tailam. *Saudi Journal of Biological Sciences*, *30*(7), p.103700.
2. Kumar, S., Prasad, A.K., Iyer, S.V. and Vaidya, S.K., 2013. Systematic pharmacognostical, phytochemical and pharmacological review on an ethno medicinal plant, Basella alba L. *Journal of Pharmacognosy and Phytotherapy*, *5*(4), pp.53-58.
3. Sakthiganapathi, M., Yoganandam, G.P. and Gopal, V., 2023. Formulation, characterization, and evaluation of wound healing potency of a novel Mattan tailam nanogel based on a famous traditional Siddha formula. *Avicenna Journal of Medical Biotechnology*, *15*(1), p.38.
4. Michael, J.S., Singh, A.R. and Padmalatha, C., 2011. Antibacterial potential of some herbo-mineral siddha preparation: An alternative medicine for enteric pathogens. *J. Chem. Pharm. Res*, *3*(3), pp.572-578.
5. Jahandideh, M., Hajimehdipoor, H., Mortazavi, S.A., Dehpour, A. and Hassanzadeh, G., 2016. A wound healing formulation based on Iranian traditional medicine and its HPTLC fingerprint. *Iranian Journal of Pharmaceutical Research: IJPR*, *15*(Suppl), p.149.
6. Rajalakshmi, P., Vadivel, V. and Brindha, P., 2017. Investigation of in vitro antioxidant and anti-inflammatory activities of selected siddha polyherbal formulations. *Indian J of Pharmaceutical Education and Research*, *51*(4S), pp.S747-S753.

IOT WEARABLES IN SIDDHA DIAGNOSIS: A TECHNOLOGICAL REVIEW

Tasnim N*[1], Dr.V.Jayashree[2]

[1*]B.Pharm student, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai

[2]Associate Professor, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai

Corresponding Author: Dr.V.Jayashree

Corresponding mail ID: jeya.sps@vistas.ac.in

NTRODUCTION

Currently, various emerging technologies are being developed for healthcare systems. The Internet of Things (IoT) is one such technology. Siddha medicine is one of the traditional medicinal systems. But the technology used is limited for Siddha. IoT wearable devices can be more effective in monitoring vital signs and diagnosing diseases early and accurately. IoT wearables are smart electronic devices such as smart bands, watches, or sensors that can be worn on the body to continuously monitor health parameters like body temperature, heart rate, pulse, sleep patterns, and physical activity. These wearables for siddha medicine work by *Naadi* (pulse reading) and *Yakkai Ilakkanam* (body constitution analysis) using sensor-based systems for continuous assessment of the patient's vitals. This review article emphasizes the need for IoT wearable devices and the technology that can be improved for the same in Siddha medicine.

METHODOLOGY

IoT wearables are worn by patients to measure vital parameters, physical activity, and sleep patterns. The collected data is continuously recorded and transferred via wireless communications like Wi-Fi, Bluetooth, ZigBee, or MQTT to a cloud system or any mobile applications. Then it is stored and processed using data analytics techniques to analyze the variations in imbalances in the siddha principles. Finally, it is analyzed by the siddha practitioners for diagnostic purposes, and personalized treatments are suggested.

DISCUSSION

There are some IoT wearable devices in existing research. The Siddha system is based on **wrist-**based measurements (Manikadainool). It works on the principle of the five basic elements(panchabhootham)- fire(thee), water(neer), air(kaatru), space (Mann), and earth/ ether(aagayam), and three humors (Mukkutram)- vatham (air+ space)- controls the breathing, movement, and the nervous system, pitham(fire)– body metabolism and digestion, and kapham (earth + water)– immunity and stability. The seven constituents are present in the body. They are: Saaram, Cheneer, Oon, Kozhuppu, Enbu, Moolai, Sukilam/Suronitham. IoT wearables automate the collection of physiological signals that correspond to these diagnostic markers, like pulse sensors that sense pulse variations, temperature sensors that sense imbalance linked to pitham, and motion sensors that correspond to tracking of lifestyle patterns. These devices work based on sensor-based wrist measurements and automated health prediction. It offers remote monitoring, making diagnosis easier for both patients and practitioners, allows Siddha doctors to provide online consultations for people who cannot frequently visit the hospital, and facilitates personalized treatment based on sensor recordings. By integrating multi-sensor data streams with AI models, Siddha's constitution-based monitoring can be digitized healthcare. IR and color sensors are used to detect physical parameters. It helps in the early detection of any diseases. Though it has more applications, there are challenges to be concerned about. It needs data accuracy, power consumption, stable internet connections, interoperability, and data privacy issues.

RESULT

The research related to this is increasing at present, but no research is related to the standardization of the digital framework. Since the diagnosis varies for each siddha practitioner as per their traditional knowledge and experience, it is mandatory to set a standard model to map with the siddha alerts. Additionally, the existing research focuses only on short-term monitoring, not on long-term monitoring. So, it is necessary to work on long-term monitoring wearables for interpreting the serious condition.

CONCLUSION:

In conclusion, IoT wearable devices have several applications and various disadvantages. Through continuous study, the disadvantages can be minimized, such as improving the devices with high data encryption security for privacy concerns. Moreover, by setting a standardized digital framework for siddha indications and improving the short-term monitoring into long-term monitoring devices also helps in technological advancement in the siddha medicinal system.

REFERENCES

1. IoT-based Siddha diagnosis for human health monitoring. Indian Journal of Traditional Knowledge. 2023 Dec 13;22(4).
2. Mamdiwar SD, R A, Shakruwala Z, Chadha U, Srinivasan K, Chang CY. Recent Advances on IoT-Assisted Wearable Sensor Systems for Healthcare Monitoring. Biosensors. 2021 Oct 4;11(10):372.
3. Junaid SB. Recent Advancements in Emerging Technologies for Healthcare Management Systems: A Survey. Healthcare. 2022 Oct 3;10(10):1–45.

SMART SYNERGY: AI IN SIDDHA-ALLOPATHY HERBAL-DRUG INTERACTIONS- A REVIEW

Mohamed Fahid[1], M.Manoyogambiga*
[1]B.Pharm student, School of Pharmaceutical Sciences, VISTAS, Chennai
*Department of Pharmaceutics, School of Pharmaceutical Sciences, VISTAS, Chennai
Corresponding Author: M. Manoyogambiga
Corresponding mail ID: manoyogambiga.sps@vistas.ac.in

INTRODUCTION

Traditional systems of medicine and modern allopathy have long coexisted, each contributing unique therapeutic strengths to healthcare. The Siddha system of medicine, one of the oldest traditional medical systems, emphasizes the balance of humors and five basic elements. In contemporary clinical practice, the concurrent use of Siddha herbal medicines along with allopathic drugs has become increasingly common, particularly in the management of chronic diseases, which may lead to synergistic therapeutic effects, reduced drug activity, or adverse reactions. Herbal medicines used in siddha have various phytoconstituents that may alter the responses of pharmacokinetic and pharmacodynamic effects. But there are only limited existing studies about the interaction between herbal-drugs. In healthcare, AI is emerging as a powerful technology that facilitates advanced data integration, pattern recognition, and predictive tools.

METHODOLOGY

AI models, such as machine learning, network pharmacology, and deep learning, help in accessing larger datasets from genomics, pharmacology, and clinical studies for the study of complex herbal formulations and their interactive effects. Moreover, it helps in analyzing the possible synergistic and antagonistic effects of herbal-drug interactions. It provides information with higher accuracy.

DISCUSSION

There are some misconceptions that herbals are always safe and effective. But it also produces side effects and may also produce interactions with the allopathic drugs. About 16% of people do not inform their doctors when they are taking both medicines, which may lead to some serious concerns. There are two major mechanisms of interaction. They are: Pharmacodynamic and Pharmacokinetic. Pharmacodynamics is what a drug does to the body- *Capsicum annum* will alter the gut motility and blood flow that affects the absorption process, drugs like warfarin, which are highly protein-bound drugs, can reduce the binding effect that affects the distribution process, grapefruit juice will reduce the metabolism activity. Electrolyte imbalance can be caused by diuretics and corticosteroids when taken along with herbals, which may affect the excretion process. Pharmacokinetics is what the body does to the drug- *Shankapushpi* reduces phenytoin efficacy, and herbs like garlic, and ginkgo increase bleeding risk. Antibiotics, anticonvulsants, and oral hypoglycemics are the major categories often involved with interactions. Cytochrome P450 is the enzyme that is involved in the metabolism of allopathic drugs. But most of the herbal drugs either induce or inhibit the effect of that enzyme, which leads to decreased drug effect and toxicity. Prevention of these interactions includes monitoring the patients closely, avoiding unnecessary medications, and providing awareness to both patients and practitioners.

RESULT

Developing AI models helps in predicting herbal-drug interactions before they occur. It also supports a strong framework of pharmacovigilance. Algorithms are being trained on existing interaction data. AI helps with big data capability, which analyzes chemical properties, herb constituents, and patient records. It also helps with pattern recognition that detects nonlinear relationships. It analyzes early detection of interactions before clinical cases accumulate and helps in decision support for the practitioners in a shorter period.

CONCLUSION

In conclusion, developing AI models could predict the interactions between herbal-drug interactions, which allows early detection and prevention. Also, providing awareness to patients and practitioners about interactions. In addition, avoiding polypharmacy minimizes the siddha and allopathic interactions.

REFERENCES

1.Rammanohar Puthiyedath, M. Sujithra, Prema Nedungadi. Artificial Intelligence-driven prediction of Drug–Herb Interactions: A critical need in India's pluralistic health culture and Pharmacovigilance framework. International Journal of Ayurveda Research. 2025 Oct 1;6(4):486–94.

2. Srivastava A, Rengaraju M, Srivastava S, Narayanan V, Gupta V, Upadhayay R, et al. Efficacy of two siddha polyherbal decoctions, Nilavembu Kudineer and Kaba Sura Kudineer, along with standard allopathy treatment in the management of mild to moderate symptomatic COVID-19 patients—a double-blind, placebo-controlled, clinical trial. Trials. 2021 Aug 28;22(1).

3. Sharma AK, Kapoor VK, Kaur G. Herb–drug interactions: a mechanistic approach. Drug and Chemical Toxicology. 2020 Mar 12;1–10.

4. P Manojkumar, Siddhanand S Kulkarni, Shashikant D Wadkar. Review on interaction of herbal medicine with allopathic medicine. journal of ayurveda and holistic medicine. 2014 Feb 20;2(2):38–42.

"Siddha Medicine in PCOS: An Evidence-Based Review"

Dharshini M*[1], Dr.V.Jayashree[2]
[1*]B.Pharm student, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai
[2]Associate Professor, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai
Corresponding Author: Dr.V.Jayashree
Corresponding mail ID: jeya.sps@vistas.ac.in

.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common endocrine–metabolic disorder in women of reproductive age, characterized by ovulatory dysfunction, hyperandrogenism and polycystic ovarian morphology, often accompanied by insulin resistance, obesity and cardiometabolic risk. Conventional management targets symptom control (e.g., combined oral contraceptives, insulin sensitizers, ovulation induction) but long-term adverse effects and incomplete symptom relief leave room for complementary approaches. Siddha medicine — a traditional South Indian system — uses multi-herbal and herbo-mineral formulations plus lifestyle interventions (including dietary regulation and yoga) to address systemic imbalances believed to underlie gynecological disorders. Interest in Siddha for PCOS has grown; however, evidence quality and mechanisms remain incompletely characterized.

METHODOLOGY

This review synthesizes published preclinical studies, clinical trials/case series, formulation analyses and scoping reviews relevant to Siddha interventions in PCOS. Sources were identified by searching academic databases and open repositories for terms combining "Siddha", "Siddha formulations", "herbo-mineral", "polycystic ovary syndrome", and related keywords. We prioritized: (1) randomized or controlled clinical studies where available, (2) observational/interventional clinical reports, (3) animal and in-vitro mechanistic studies of Siddha/herbal formulations relevant to PCOS pathophysiology, and (4) pharmaco-analytical studies of commonly used Siddha preparations. Data extracted included study design, population or model, intervention (formulation, dose, duration), outcomes (menstrual regularity, ovulation, androgen/metabolic markers, safety), and study limitations. Where possible we summarized pharmacological mechanisms proposed by authors (e.g., insulin-sensitizing, anti-androgenic, anti-inflammatory, antioxidant). (Search and selection approach informed by recent scoping reviews and formulation studies.)

DISCUSSION

Siddha medicine offers a holistic approach to the management of Polycystic Ovary Syndrome (PCOS) by addressing hormonal imbalance, metabolic dysfunction, and lifestyle factors. Evidence from experimental studies indicates that Siddha polyherbal formulations possess antioxidant, anti-inflammatory, and insulin-sensitizing properties, which play an important role in correcting the underlying pathology of PCOS. These mechanisms may help reduce ovarian cyst formation, regulate ovulation, and improve menstrual cyclicity.

Clinical observations and small-scale studies suggest that Siddha interventions may lead to improved menstrual regularity, reduction in hyperandrogenic symptoms, and better overall health when combined with dietary regulation and yogic practices. The integrative nature of

Siddha therapy aligns well with the multifactorial nature of PCOS, targeting both physical and metabolic components of the disorder.

However, the current evidence has notable limitations. Most available studies involve small sample sizes, lack control groups, and use non-standardized formulations, which limits the strength of conclusions. In addition, long-term safety data and herb–drug interaction studies are insufficient. Future research should focus on well-designed randomized controlled trials, standardization of Siddha formulations, and objective outcome measures to establish Siddha medicine as a reliable complementary approach in PCOS management.

RESULT

Evidence from preclinical studies shows that Siddha formulations can improve estrous cyclicity, reduce ovarian cysts, and regulate hormonal and metabolic disturbances in PCOS models. Limited clinical studies and case reports suggest improvements in menstrual regularity, reduction of PCOS symptoms, and better overall well-being. However, most human studies have small sample sizes and lack rigorous controls.

CONCLUSION:

In conclusion, Siddha medicine shows potential benefits in the management of PCOS through hormonal regulation, metabolic improvement, and symptom relief. While early findings are promising, the current evidence is limited. Well-designed, large-scale clinical trials with standardized Siddha formulations are needed to confirm efficacy and ensure safety before routine clinical use.

REFERENCE

- Thilagavathi R. *Role of Siddha medicine in the management of Polycystic Ovarian Syndrome (PCOS).* International Journal of Research in Ayurveda and Pharmacy, 2019.
- Lakshmi JN, et al. *Herbal medicines and their role in the management of Polycystic Ovarian Syndrome.* Journal of Herbal Medicine, 2023.

Advanced Analytical Techniques for Validation of Siddha Medicines: Bridging Tradition with Modern Science: A Systematic Review

S.Akkshatha, Malarkodi Velraj, P Shanmugasundaram
B.Pharmacy V SEM, School of Pharmaceutical Sciences, VISTAS, Tamilnadu, India-600117.

INTRODUCTION

Siddha medicine is a traditional system of healthcare in which the medicines are usually prepared as powders, decoctions, and oil-based formulations involving multiple herbs. The studies referred here highlight that such formulations have complicated chemical compositions owing to the fact that they include many plant-based ingredients. For this reason, it is quite difficult to ascertain quality, identity, and evenness if one only relies on traditional methods given the complexity. These methods, as indicated in the papers under review, facilitate the integration of traditional Siddha knowledge with modern scientific evaluation without changing the original principles of the system.

REVIEW OF LITERATURE

The literature reviewed has strongly supported the idea of employing modern instrumental techniques to confirm the authenticity of Siddha formulations. The research on Amukkara Curanam was one of the studies in which HPTLC was used to create a distinguishing fingerprint profile. This fingerprinting method was instrumental in locating the marker compounds and hence, it helped to verify the formulation's authenticity and consistency. The HPTLC is an effective tool for regular quality control in polyherbal complex Siddha medicines. Another study involved the use of HPTLC and GC-MS to the evaluation of Siddha tailams. HPTLC was instrumental in producing the reproducible fingerprint patterns, and the GC-MS was used to facilitate the identification of the chemical constituents in the oil-based preparations. The simultaneous application of the two methods unveiled the most complete chemical profile of the tailams, paving the way for their standardization. GC-MS research was also cited in articles about Kabasura Kudineer, a popular Siddha decoction. The analysis made it possible to locate the several volatile and semi-volatile compounds that were present in the formulation. The articles under review state that such chemical profiling aids in quality assessment and also provides scientific insight into traditional formulations. The analytical techniques such as HPTLC and GC-MS are of great importance in authentication, quality control, and validation of Siddha medicines, while also being supportive of the traditional knowledge systems.

CONCLUSION

The advanced instrumental techniques like HPTLC and GC-MS have been profoundly discussed in the literary works chosen to provide validation and standardization of Siddha medicines as their primary goal. These papers serve as proof that these techniques accomplish these goals by producing chemical fingerprints, recognizing constituents, and making sure that the formulations are consistent from one batch to another. These methods pave the way for evidence-based Siddha research and promote the scientific acceptability of Siddha medicines, which still keep their traditional nature. The literature reviewed clearly demonstrates that these techniques are effective in generating chemical fingerprints, identifying constituents, and ensuring batch-to-batch consistency of traditional formulations. Moreover, the use of these analytical tools fosters evidence-based Siddha research and fortifies the scientific legitimacy of Siddha medicines

REFERENCES

1. Senthilnathan S, et al. HPTLC and GC-MS fingerprinting of two Siddha tailams. Saudi Journal of Biological Sciences, 2023.
2. Jeganathan NS, et al. Standardization of Amukkara Curanam using HPTLC. African Journal of Traditional, Complementary and Alternative Medicines, 2008.
3. Sudhan A, et al. GC-MS analysis of Kabasura Kudineer. Journal of Pharmacy and Bioallied Sciences, 2024.

CHITOSAN-BASED DRUG DELIVERY SYSTEMS FOR THE MANAGEMENT OF ORAL INFECTIONS

HEMASURYA J*, GOMATHI AR
Vellalar College of Pharmacy

INTRODUCTION:

The mucous layer in the oral cavity has the main function of protecting the inside of oral cavity tissue from external injury by resisting abrasion caused by daily normal activities [1]. Apart from protecting against mechanical injury, mucous membranes can control the growth of infection-causing bacteria when they enter and spread into tissues. Its high activity puts the oral mucous membrane at risk of injury.(1)

Recurrent aphthous ulcers (RAU) or aphthae are considered to be one of the most encountered insults that affect the oral cavity. They are painful oval-shaped sores in the oral cavity and tend to be reddish in color due to blood vessel dilatation. Oral mucositis (OM), a complication of cancer treatment, commonly occurs during radiation therapy to the head and neck, chemotherapy, chemoradiotherapy, and platelet stem cell transplantation.(2,3)

Chitosan has been used in various studies to develop carriers to deliver medical formulations, including drugs, plant extracts, microorganisms, and their soluble components. Under acidic conditions, the protonated amino groups of chitosan confer mucoadhesive properties, facilitating prolonged contact with biological surfaces and promoting drug absorption. Hence, various formulations are developed by chitosan to deliver drug for treatment of RAS, oral mucositis and other pathogenic infections.(4)

CHITOSAN PROPERTIES RELEVANT TO ORAL DRUG DELIVERY:

Chitosan is a polysaccharide obtained through the alkaline deacetylation of chitin, a cellulose-like polymer found in animals' cell walls, is a valuable material in the food, pharmaceutical, and medical industries due to its excellent biodegradability and biocompatibility.(3) The versatility of chitosan is evident in its film-forming ability, controlled swelling behavior, and high surface area, which make it suitable for various drug, protein, bacteria, yeast, and microalgae delivery systems, such as nanoparticles Ø 1–1000 nm), microparticles (Ø 1–1000 μm), hydrogels, fibers, and membranes. (4)

FORMULATIONS DEVELOPED BY CHITOSAN:

DRUG USED	FORMULATION TYPE	APPLICATIONS
Benzydamine	Chitosan- TPP Nanoparticles	It is being used to treat different oral conditions such as oral mucositis, postoperative soreness in the throat and mucosal ulcers.(5)
Diclofenac	Chitosan based Buccal film containing ascorbic acid.	It is a non steroidal anti inflammatory drug used to relieve pain.(6)
α-mangostin from mangosteen	Alignate chitosan based hydrogel film	It has wound healing, inhibiting inflammatory reactions, and regenerating epithelial cells used for treating RAS.(1)
Miconazole nitrate	Liposomes	It is used in the treatment of oral candidiasis caused by fungal infections.(7)
Sodium fluoride	In situ gels	It is used in enamel biomineralization for dental caries.(8)
Trimethyl chitosan	Hydrogels	It used in treatment of oral mucositis. (3)

CONCLUSION:

Chitosan is a versatile biopolymer used to enhance the drug delivery, mucoadhesive properties and provide anti microbial effects in some cases. It also has a non-cytotoxic and biocompatible natural properties, shows direct antibacterial activity and is a suitable matrix for delivering antibacterial peptides and proteins. The incorporation of polyethylene glycol (PEG) chains enhances the stability of chitosan and reduces its immunogenicity. Improving the mucoadhesive properties and biological interactions of chitosan can be accomplished by functionalizing amino groups, while hydroxyl groups considerably enhance chitosan's solubility and stability. Further researches are going to develop more formulations from this polymer chitosan.(4)

REFRENCES:

1.Milanda T, Cindana Mo'o FR, Mohammed AFA, Elamin KM, Wilar G, Suharyani I, et al. Alginate/Chitosan-Based Hydrogel Film Containing α-Mangostin for Recurrent Aphthous Stomatitis Therapy in Rats. Pharmaceutics. 2022 Aug 16;14(8):1709.

2.Ossama M, Lamie C, Tarek M, Wagdy HA, Attia DA, Elmazar MM. Management of recurrent aphthous ulcers exploiting polymer-based Muco-adhesive sponges *: in-vitro* and *in-vivo* evaluation. Drug Deliv. 2021 Jan;28(1):87–99.

3.Ryu HS, Abueva C, Padalhin A, Park SY, Yoo SH, Seo HH, et al. Oral ulcer treatment using human tonsil-derived mesenchymal stem cells encapsulated in trimethyl chitosan hydrogel: an animal model study. Stem Cell Res Ther. 2024 Apr 8;15(1):103.

4.Gonciarz W, Balcerczak E, Brzeziński M, Jeleń A, Pietrzyk-Brzezińska AJ, Narayanan VHB, et al. Chitosan-based formulations for therapeutic applications. A recent overview. J Biomed Sci. 2025 July 8;32(1):62.

5.Marudova M, Zahariev N, Milenkova S, Pilicheva B, Viraneva A, Yovcheva T. Development and In-Vitro Characterization of Benzydamine Loaded Chitosan Nanoparticles. Macromol Symp. 2021 Feb;395(1):2000279.

6.Kristó K, Módra S, Hornok V, Süvegh K, Ludasi K, Aigner Z, et al. Investigation of Surface Properties and Free Volumes of Chitosan-Based Buccal Mucoadhesive Drug Delivery Films Containing Ascorbic Acid. Pharmaceutics. 2022 Feb 1;14(2):345.

7.Abruzzo A, Corazza E, Giordani B, Nicoletta FP, Vitali B, Cerchiara T, et al. Association of mucoadhesive polymeric matrices and liposomes for local delivery of miconazole: A new approach for the treatment of oral candidiasis. Int J Pharm. 2024 Aug;661:124461.

8.Rafiee A, Memarpour M, Amiri M, Azadi A, Fekri N, Mozafari N, et al. Comparison of various chitosan-based in situ forming gels with sodium fluoride varnish for enamel biomineralization: an in-vitro pH cycling model. Sci Rep. 2024 Sept 10;14(1):21100.

RECENT ADVANCEMENTS IN THE DIAGNOSIS AND TREATMENT OF RECURRENT APHTHOUS STOMATITIS

K. ANUSHA*, AR GOMATHI.
Vellalar College of Pharmacy

INTRODUCTION:

Recurrent aphthous stomatitis (RAS; aphthae; canker sores) is typified by recurrent ulceration of the oral mucosa. Whereas patients with RAS have no other clinical abnormalities, people with Behcet disease may also develop a wide spectrum of genital, ocular, cutaneous, neurological, and vascular problems. (1) The term "aphthous" is derived from a Greek word "aphtha" which means ulceration. Recurrent aphthous stomatitis (RAS) is one of the most common painful oral mucosal conditions seen among patients. (2) Among these, delivery of drugs to the oral cavity has attracted particular attention due to its potential for high patient compliance and unique physiological features. Within the oral mucosal cavity, the delivery of drugs is classified into two categories: (i) local delivery and (ii) systemic delivery either via the buccal or sublingual mucosa. Additionally, although colonoscopy is regarded as a relatively safe procedure, it entails the risk of perforation of the intestinal wall. (4) Aphthous-like ulceration is a cardinal feature but may be more severe, and is more likely to comprise major or herpetiform ulcers, or both. Patients also have recurrent genital ulceration, cutaneous disease (usually papulopustular lesions or erythema nodosum), ocular disease (typically posterior uveitis) and a range of gastrointestinal, neurological, renal, joint and haematological abnormalities. (1)

CAUSES AND PATHOGENESIS:

The cause of RAS is still unknown. The histopathological changes in the pre-ulcerative stage include infiltration of the epithelium by mononuclear (lymphocytic) cells. Oedema develops, followed by keratinocyte vacuolisation and localised vasculitis causing localised swelling that ulcerates and is infiltrated by neutrophils, lymphocytes, and plasma cells before there is healing and regeneration of the epithelium. TNF-is a major inflammatory inflammation and expression of major histocompatibility (MHC) complexes. This results in the targeting of epithelial cells for attack by cytotoxic (CD8+) T-cells. Minor RAS is also known as Miculiz's aphthae or mild aphthous ulcers. It is the most common variant, constituting 80% of RAS. Ulcers vary from 8 to 10 mm in size. It is most commonly seen in the nonkeratinized mucosal surfaces like labial mucosa, buccal mucosa, and floor of the mouth. Ulcers heal within 10–14 days without scarring (2).

DIAGNOSIS:

several conditions can present with mucosal aphthous ulcers, necessitating a thorough workup to narrow the differential. Physical examination should be used to screen for trauma secondary to dental appliances, widespread vesiculobullous eruptions, and signs of hormone imbalance. the presence of a fever should prompt workup for infection, and if the fever is recurrent, fever syndromes. Blood work should be used to rule out hematologic or nutritional deficiencies and antibodies related to autoimmunity. the differential diagnosis for oral ulcerations includes several entities, including recurrent aphthous stomatitis, drug induced mucocutaneous syndromes, autoimmune disorders, hematologic disorders, nutritional deficiencies, fever syndromes, vesiculobullous diseases, and infection.3a diagnosis of RAS cannot be made unless other causes for aphthous stomatitis have been considered and dismissed (3).

CONVENTIONAL THERAPY:

TOPICAL THERAPIES	SYSTEMIC THERAPIES	LIGHT THERAPY

Currently, the management of RAS is aimed at supportive care. no pharmacological treatment has been curative, although several modalities have been effective in decreasing pain and erythema and increasing the rate of reepithelialization associated with healing lesions (3)	several systemic medications have been reported as effective for treating RAS in the literature. there is evidence to suggest that oral antimicrobials, such as penicillin G (50mg QIDX4 days), decrease ulcer size and pain. Clofazimine, an antimicrobial, in combination with rifampin and dapsone, has been shown to prevent the formation of new lesions (3)	low-level laser therapy at a wavelength of 658nm may also be beneficial in RAS patients as an adjunctive. it was shown to be equal or even superior to pharmacological treatment in managing pain and inflammation and increasing reepitheliazation of aphthous ulcers (3)

CONCLUSION:

Recurrent apthous stomatitis is a very common, recurrent painful ulceration occurring in the oral cavity. Oral ulcers diagnosis can be challenging and requires a comprehensive clinical examination as well as a comprehensive medical history. It is imperative to acknowledge that symptoms related to the mouth may indicate a more serious issue. To verify if the diagnosis is accurate, a biopsy can be required. If an oral ulcer does not heal after two weeks, it should be investigated under a microscope (5)

REFERENCE:

1. 1. Scully C, Porter S. Oral mucosal disease: recurrent aphthous stomatitis. British Journal of Oral and Maxillofacial Surgery. 2008 Apr 1;46(3):198-206.
2. Preeti L, Magesh KT, Rajkumar K, Karthik R. Recurrent aphthous stomatitis. Journal of oral and maxillofacial pathology. 2011 Sep 1;15(3):252-6.
3. Edgar NR, Saleh D, Miller RA. Recurrent aphthous stomatitis: a review. The Journal of clinical and aesthetic dermatology. 2017 Mar 1;10(3):26.
4. Viralkumar F. Patel a, Fang Liu a, Marc B. Browna, b∗. Advances in oral transmucosal drug delivery. V.F. Pateletal. / JournalofControlledRelease153(2011);106-116.
5. M. N. ANUSHA, N. ARAVINDHA BABU, E. RAJESH, JAYASRI KRUPAA, TEJASWIN A. ORAL ULCERS AND ITS DIFFERENTIAL DIAGNOSIS. TPM Vol. 32, No. S5, 2025 ISSN: 1972-6325.

SCIENTIFIC VALIDATION OF SIDDHA FORMULATIONS: BRIDGING TRADITIONAL KNOWLEDGE WITH MODERN BIOMEDICAL EVIDENCE.

Praveena Anitta A[1]., Manonmani R[2*].

[2*] Assistant Professor, PG and Research Department of Botany, Holy Cross College (Autonomous),
Affiliated to Bharathidasan University, Trichy 620 002, Tamil Nadu, India.

[1] Research scholar, PG and Research Department of Botany, Holy Cross College (Autonomous),
Affiliated to Bharathidasan University, Trichy 620 002, Tamil Nadu, India.

1. INTRODUCTION

Traditional systems of medicine play a crucial role in global healthcare, particularly in developing countries where a significant proportion of the population depends on herbal and traditional remedies for primary healthcare needs (World Health Organization [WHO], 2013). The Siddha system of medicine, originating in South India, represents one of the most ancient and comprehensive traditional medical systems, with documented practices spanning several millennia.

Siddha medicine is fundamentally holistic, emphasizing the balance of three humors-Vali (air), Azhal (fire) and Iyyam (water)-along with the five elemental principles (Pancha Bhootham). Siddha formulations are extensively employed in the management of chronic ailments, metabolic disorders, inflammatory conditions, infectious diseases and degenerative illnesses (Kumar *et al*., 2017).

Despite its long-standing clinical relevance, Siddha medicine faces challenges in global acceptance due to limited scientific evidence supporting its therapeutic claims. Modern biomedical science emphasizes reproducibility, standardization and mechanistic understanding, necessitating the scientific validation of traditional formulations. Scientific validation aims not to replace traditional wisdom but to reinforce it through modern scientific approaches, thereby enabling the integration of Siddha medicine into evidence-based healthcare.

2. NEED FOR SCIENTIFIC VALIDATION OF SIDDHA FORMULATIONS

The growing global interest in complementary and alternative medicine has increased the demand for scientifically validated traditional healthcare systems. Siddha formulations often consist of multiple plant ingredients and in some cases, mineral components, contributing to their therapeutic complexity.

Key reasons for scientific validation include:

- Ensuring **safety**, particularly in herbo-mineral preparations
- Achieving **quality control and standardization**
- Establishing **therapeutic efficacy** using experimental models
- Meeting **regulatory requirements** for national and international acceptance

Scientific validation strengthens the credibility of Siddha medicine and facilitates its integration into modern integrative healthcare systems (Patwardhan *et al*., 2015).

3. TEXTUAL AUTHENTICATION AND BOTANICAL IDENTIFICATION

Textual authentication forms the foundation of Siddha drug research. Classical Siddha texts such as Agathiyar Gunapadam, Theraiyar Yemaga Venba and Siddha Materia Medica

provide detailed descriptions of medicinal ingredients, purification methods (Suddhi), preparation techniques, dosage forms and therapeutic indications (Murugesa Mudaliar, 2008).

Accurate botanical identification of plant materials is critical to avoid adulteration and substitution. Authentication techniques include macroscopic and microscopic evaluation, preparation of herbarium voucher specimens and molecular identification using DNA barcoding. Proper identification ensures consistency, safety and reproducibility of Siddha formulations (Newmaster *et al*., 2013).

4. QUALITY CONTROL AND STANDARDIZATION

4.1 Physicochemical Evaluation

Physicochemical parameters such as total ash, acid-insoluble ash, moisture content, pH and extractive values serve as preliminary indicators of quality and purity. These parameters help detect adulteration and ensure compliance with pharmacopeial standards (Indian Pharmacopoeia Commission, 2018).

4.2 Phytochemical Profiling

Phytochemical analysis identifies bioactive constituents responsible for therapeutic effects. Preliminary qualitative tests detect major secondary metabolites, while advanced chromatographic techniques such as HPTLC, HPLC and GC-MS generate chemical fingerprints essential for standardization and quality assurance (Sasidharan *et al*., 2011).

4.3 Contaminant Analysis

Safety evaluation includes the detection of heavy metals, pesticide residues, aflatoxins and microbial contamination. Techniques such as Atomic Absorption Spectroscopy (AAS) and Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) are employed to ensure compliance with WHO safety limits (WHO, 2011).

5. PRECLINICAL EVALUATION

5.1 In Vitro Pharmacological Studies

In vitro assays are used to assess antioxidant, anti-inflammatory, antimicrobial, antidiabetic and enzyme inhibitory activities. These studies provide rapid screening and preliminary insights into therapeutic potential.

5.2 In Vivo Pharmacological Studies

Animal models are employed to evaluate therapeutic efficacy, dose-response relationships and pharmacokinetics. These studies help translate traditional claims into scientifically measurable outcomes.

5.3 Toxicological Evaluation

Toxicity studies, including acute, sub-acute and chronic toxicity assessments, are conducted in accordance with OECD guidelines to establish safety margins and identify potential adverse effects (OECD, 2014).

6. ROLE OF ADVANCED SCIENTIFIC TOOLS IN SIDDHA RESEARCH

Recent technological advancements have introduced powerful tools for understanding the complex, multi-component nature of Siddha formulations.

6.1 In Silico Approaches

Computational methods such as molecular docking, network pharmacology and QSAR modelling help predict multi-target interactions and synergistic mechanisms (Hopkins, 2008).

6.2 Omics Technologies

Omics approaches-genomics, proteomics, metabolomics, and transcriptomics-enable comprehensive evaluation of biological pathways influenced by Siddha drugs (Patwardhan & Mashelkar, 2009).

.

6.3 Artificial Intelligence

Artificial intelligence and machine learning tools assist in toxicity prediction, pattern recognition and formulation optimization, improving safety and efficacy assessment (Chen *et al*., 2018).

7. CLINICAL VALIDATION AND REGULATORY ASPECTS

Clinical validation through well-designed randomized controlled trials is essential for establishing efficacy and safety in human populations. Harmonization with national (AYUSH) and international (WHO) regulatory frameworks is crucial for global acceptance and commercialization of Siddha formulations (Ministry of AYUSH, 2020).

8. CHALLENGES AND FUTURE PERSPECTIVES

Major challenges include polyherbal complexity, lack of standardized protocols, variability in raw materials and regulatory constraints. Future research should emphasize interdisciplinary collaboration, integrative methodologies and translational studies to strengthen evidence-based Siddha medicine.

9. CONCLUSION

Scientific validation of Siddha formulations is essential for bridging traditional medical wisdom with modern biomedical science. A structured and systematic validation framework encompassing standardization, preclinical evaluation, advanced analytical techniques and clinical studies can enhance the credibility and global acceptance of Siddha medicine. Evidence-based Siddha formulations hold immense potential in addressing contemporary healthcare challenges through holistic and integrative therapeutic approaches.

10.ACKNOWLEDGEMENT

We thank the Department of Science and Technology, Government of India, for providing support through the Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) program (Grant No. SR/FIST/College-/2020/943).

REFERENCES:

- Chen, H., Engkvist, O., Wang, Y., Olivecrona, M., & Blaschke, T. (2018). The rise of deep learning in drug discovery. Drug Discovery Today, 23(6), 1241–1250.
- Hopkins, A. L. (2008). Network pharmacology: The next paradigm in drug discovery. Nature Chemical Biology, 4(11), 682–690.
- Indian Pharmacopoeia Commission. (2018). Indian Pharmacopoeia (Vols.I–III). Government of India.
- Ministry of AYUSH. (2020). Good clinical practice guidelines for ASU drugs. Government of India.
- Murugesa Mudaliar, K. S. (2008). Gunapadam: Mooligai Vaguppu. Directorate of Indian Medicine and Homeopathy.
- Newmaster, S. G., Grguric, M., Shanmughanandhan, D., Ramalingam, S., & Ragupathy, S. (2013). DNA barcoding detects contamination and substitution in herbal products. BMC Medicine, 11, 222.
- OECD. (2014). Guidelines for the testing of chemicals. OECD Publishing.

- Patwardhan, B., & Mashelkar, R. A. (2009). Traditional medicine-inspired approaches to drug discovery. Drug Discovery Today, 14(15–16), 804–811.
- Patwardhan, B., Mutalik, G., & Tillu, G. (2015). Integrative approaches for health: Biomedical research, Ayurveda and Yoga. Academic Press.
- Sasidharan, S., Chen, Y., Saravanan, D., Sundram, K. M., & Yoga Latha, L. (2011). Extraction, isolation and characterization of bioactive compounds from medicinal plants. African Journal of Traditional, Complementary and Alternative Medicines, 8(1), 1–10.
- World Health Organization. (2011). Quality control methods for herbal materials. WHO Press.

Evidence-Based Insights into Siddha Herbal Formulations Supporting Women's Wellness

Haniya Thahseena U[1*], Dr. V. Kavitha[2]

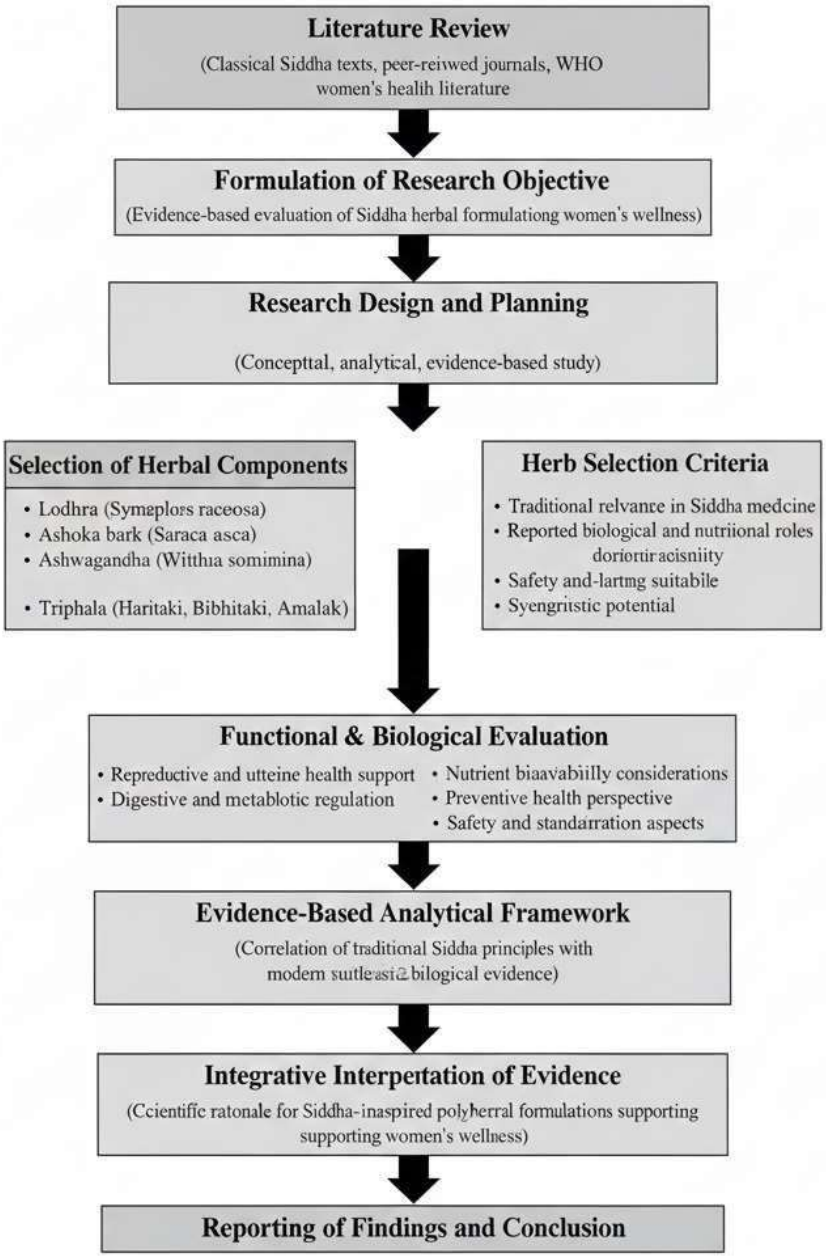
[1*]Postgraduate scholar, Department of Nutrition and Dietetics, Jamal Mohamed College, Tiruchirappalli- 20.

[2] Mentor, Head of the Department, Department of Nutrition and Dietetics, Jamal Mohamed College, Tiruchirappalli- 20.

1.Introduction

Women's health is influenced by a dynamic interplay of hormonal regulation, nutritional status, metabolic activity, and psychosocial stressors across different life stages. Conditions such as menstrual irregularities, fatigue, metabolic disturbances, and stress-related disorders are increasingly prevalent among women and are often associated with nutritional inadequacies and lifestyle changes **(Bailey *et al.*, 2022).** These challenges emphasize the need for preventive, holistic, and sustainable health strategies. Traditional medical systems such as Siddha medicine emphasize diet, lifestyle regulation, and herbal formulations as foundational components of health maintenance. Siddha texts describe the use of polyherbal combinations to restore physiological balance and enhance systemic resilience rather than focusing solely on disease management **(Patwardhan & Mashelkar, 2009).** Herbal formulations are designed to support digestion, metabolism, immunity, and reproductive health—key determinants of women's wellness. Among the herbs traditionally used for women-centric health, **Lodhra (Symplocos racemosa)**, **Ashoka bark (Saraca asoca)**, **Ashwagandha (Withania somnifera)**, and **Triphala** hold significant therapeutic relevance. Lodhra and Ashoka bark are traditionally associated with uterine and menstrual health, while Ashwagandha supports stress adaptation and neuroendocrine balance. Triphala is widely recognized for its digestive, antioxidant, and metabolic regulatory properties **(Pan *et al.*, 2014).** In the context of modern healthcare, the broader acceptance of Siddha herbal formulations requires scientific interpretation and evidence-based validation. Contemporary nutritional science provides frameworks such as functional nutrition, nutrient bioavailability, and preventive health to reinterpret traditional practices **(Heinrich *et al.*, 2020).** This paper aims to examine the biological and nutritional rationale for Siddhainspired polyherbal formulations supporting women's wellness through an evidence-based perspective.

2. Materials and methods:



3. Experimental work done:

The experimental component of this study involved theoretical formulation assessment and biological rationale evaluation rather than empirical experimentation. Functional mapping was used to relate each herbal component to major physiological systems influencing women's health. Lodhra and Ashoka bark were analyzed for their traditional association with reproductive and uterine support. Ashwagandha was evaluated for its adaptogenic properties,

particularly its role in stress modulation and energy balance. Triphala was examined for its digestive, metabolic, and detoxification-supportive functions. Special emphasis was placed on understanding the interaction between digestive efficiency, metabolic activation, and systemic physiological balance. Digestive support was considered central to enhancing nutrient absorption and utilization, thereby improving the effectiveness of herbal nutritional interventions. The integrative assessment aimed to establish a coherent biological rationale for the polyherbal approach.

4.Results and Discussion:

The conceptual and evidence-based evaluation of the selected Siddha polyherbal formulation revealed a strong functional alignment between traditional therapeutic objectives and contemporary biological understanding of women's health. Functional mapping demonstrated that the combination of Lodhra, Ashoka bark, Ashwagandha, and Triphala collectively addresses interconnected physiological systems, including reproductive function, stress regulation, digestion, and metabolic balance, which are central to women's wellness across life stages. Lodhra and Ashoka bark emerged as the primary reproductive-supportive components of the formulation. Traditional Siddha and related systems consistently describe these herbs as beneficial for maintaining uterine tone and supporting menstrual health. Modern scientific interpretations suggest that their bioactive constituents may contribute to anti-inflammatory and tissue-supportive effects, thereby reinforcing their traditional use in gynecological health management **(Patwardhan & Mashelkar, 2009)**. The inclusion of both herbs enhances formulation specificity toward women-centric physiological needs. Ashwagandha contributes a complementary adaptogenic dimension to the formulation. Chronic stress is increasingly recognized as a major disruptor of hormonal balance, metabolic efficiency, and reproductive health in women. The adaptogenic properties of Ashwagandha support neuroendocrine regulation, stress resilience, and energy homeostasis, thereby indirectly strengthening reproductive and metabolic outcomes **(Pan et al., 2013).** Its integration highlights the importance of addressing psychosocial and physiological stressors alongside reproductive health. Triphala plays a foundational role in digestive and metabolic support. Efficient digestion and nutrient bioavailability are critical determinants of the effectiveness of any nutritional or herbal intervention. Triphala's documented antioxidant, gut-regulatory, and detoxification-supportive properties contribute to improved metabolic activation and nutrient utilization, thereby enhancing the systemic impact of the formulation **(Heinrich et al., 2020).** This finding supports the Siddha principle that digestive balance is central to overall health. he synergistic integration of these herbs reflects modern functional nutrition principles, wherein combinations are designed to enhance bioavailability, physiological compatibility, and preventive efficacy rather than isolated therapeutic action. This evidence-based interpretation positions Siddha polyherbal formulations as complementary health-supportive strategies rather than alternatives to conventional care, aligning with global integrative healthcare models **(WHO, 2014).**

5. Conclusion:

The present study provides an evidence-based conceptual evaluation of a Siddha-inspired polyherbal formulation comprising Lodhra, Ashoka bark, Ashwagandha, and Triphala in the context of women's wellness. By integrating traditional Siddha principles with

contemporary biological and nutritional perspectives, the study highlights the scientific plausibility and functional relevance of polyherbal approaches in addressing the multidimensional nature of women's health.

The findings emphasize that women's wellness cannot be viewed through isolated physiological systems but rather through the interconnected regulation of reproductive health, stress adaptation, digestion, and metabolic balance. The selected herbs collectively contribute to these domains, with reproductive-supportive components complemented by adaptogenic and digestive-enhancing agents. This synergistic integration aligns closely with modern functional nutrition and preventive healthcare frameworks. Importantly, the study underscores the value of evidence-based interpretation in strengthening the credibility and applicability of traditional medical systems. By positioning Siddha herbal formulations as supportive and complementary strategies, rather than alternatives to conventional medicine, this approach encourages their responsible integration into modern healthcare models. While the present work is conceptual in nature, it establishes a clear biological rationale that can inform future experimental and clinical investigations. Further studies focusing on standardization, safety profiling, and clinical validation are warranted to substantiate the therapeutic potential of such formulations. Overall, this study contributes to the ongoing renaissance of traditional Siddha medicine through modern scientific understanding, particularly in the development of sustainable, women-centric health interventions.

REFERENCE:

1. Bailey, R. L., Smith-Ryan, A. E., Das, S. K., Baker, F. C., Madak-Erdogan, Z., Hammond, B. R., Sesso, H. D., & Mitmesser, S. H. (2022). Sex differences across the life course: A focus on unique nutritional and health considerations among women. *Advances in Nutrition*, 13(1), 192–213.
2. Ekor, M. (2014). The growing use of herbal medicines: Issues relating to adverse reactions and challenges in monitoring safety. *Frontiers in Pharmacology*, 4, 177.
3. Heinrich, M., Barnes, J., Gibbons, S., & Williamson, E. M. (2020). *Fundamentals of Pharmacognosy and Phytotherapy* (3rd ed.). Elsevier, London.
4. Kamboj, V. P. (2000). Herbal medicine. *Current Science*, 78(1), 35–39.
5. Mukherjee, P. K. (2019). *Quality Control and Evaluation of Herbal Drugs* (2nd ed.). Elsevier, Amsterdam.
6. Pan, S. Y., Litscher, G., Gao, S. H., Zhou, S. F., Yu, Z. L., Chen, H. Q., Zhang, S. F., Tang, M. K., Sun, J. N., & Ko, K. M. (2013). Historical perspective of traditional indigenous medical practices: The current renaissance and conservation of herbal resources. *Evidence-Based Complementary and Alternative Medicine*, Article ID 525340.
7. Pandey, A., & Tripathi, P. (2017). Concept of polyherbal formulations in traditional systems of medicine. *Journal of Ayurveda and Integrative Medicine*, 8(3), 198–202.
8. Patwardhan, B., & Mashelkar, R. A. (2009). Traditional medicine-inspired approaches to drug discovery: Can Ayurveda show the way forward? *Current Science*, 97(4), 458–469.
9. Sharma, P. V. (2013). *Dravyaguna Vijnana* (Vols. 1–2). Chaukhambha Bharati Academy, Varanasi.
10. World Health Organization. (2014). *WHO Traditional Medicine Strategy 2014–2023*. World Health Organization, Geneva.

"EVALUATION OF *INVITRO* ANTIMICROBIAL ACTIVITY OF AQUEOUS ROOT EXTRACT OF *SMILAX CHINA* LINN''

G.Akash*, D. Kokilavani, S. Karpagam kumara sundari, R. Senthamarai

Department of Pharmacology, Periyar College of Pharmaceutical Sciences

Tiruchirappalli- 620 021 Tamilnadu -India

INTRODUCTION

The world is blessed with an abundant array of medicinal plants, without which human survival on Earth would be precarious. These plants and their derivatives play a vital role in various medical systems like Chinese medicine, Ayurveda, Siddha, Unani, and Tibetan medicine. Ancient texts such as the Rigveda, Yajurveda, Atharvaveda, Charak Samhita, and Sushrut Samhita document the use of plants to address a wide range of health issues. The most important of these bioactive constituents of plants are alkaloids, tannin, flavonoid and phenolic compounds.In this study, aqueous root extracts of *smilax china* plants were screened for their antimicrobial activity. The species tested were: gram-positive bacteria Staphylococcus aureus and gram-negative bacteria Pseudomonas aeruginosa.

AIM AND OBJECTIVE

To identify the antimicrobial activity of aqueous root extract of *Smilax china* L. against *Staphylococcus aureus* and *Pseudomonas aeruginosa* by agar well diffusion method and further estimate the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC).

PLANT PROFILE

SCIENTIFIC CLASSIFICATION:

Kingdom	:	Plantae
Clade	:	Tracheophytes
Clade	:	Angiosperms
Order	:	Lilliales
Family	:	Smilacaceae
Genus	:	Smilax
Species	:	*S. China*

MATERIAL AND METHODS

The *smilax china* root powder was taken (250g) and 1000 mL of H_2O was added. The content was kept for stirring at 60 °C for 72 hrs with occasionally shaking. Then, the aqueous solution was filtered using what man Filter Paper No. 1. The extract was stored at 4°C for future use.

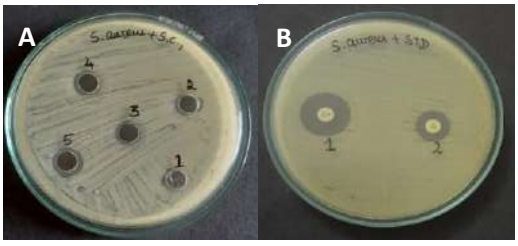
AGAR WELL DIFFUSION METHOD

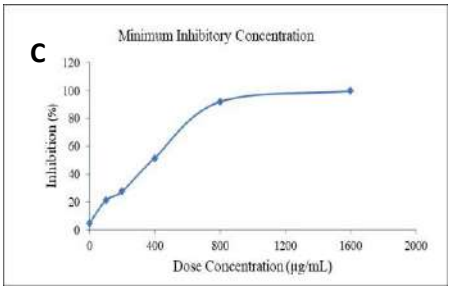
In the agar well diffusion technique, we began by inoculating Mueller-Hinton agar (MHA) plates with overnight cultures of both *S. aureus and P. aeruginosa* using the swabbing method. Following this, we created wells in the agar using a cork borer. Subsequently, we added 100 µL of various sample concentrations (ranging from 25 µg/mL to 400 µg/mL) into these wells. The plates were then left to incubate overnight at a temperature of 37°C. We carefully examined the zones of inhibition and measured their diameters. These results were subsequently compared to those obtained using the standard antibiotics, chloramphenicol (with a concentration of 30 mcg/disc) and ciprofloxacin (with a concentration of 5 mcg/disc).

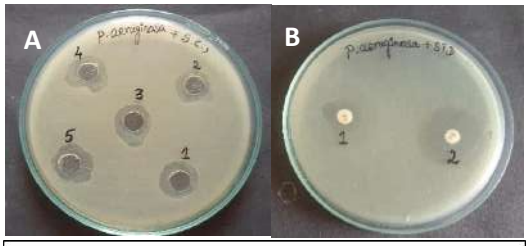
RESULTS & DISCUSSION

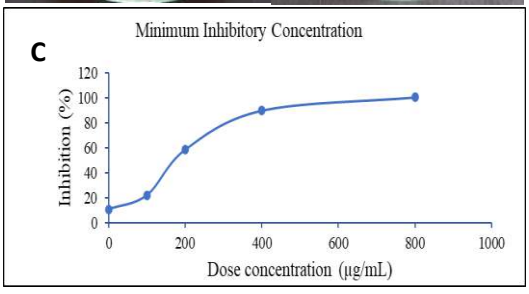
EVALUATION OF ANTIMICROBIAL ACTIVITY BY AGAR WELL DIFFUSION METHOD

Minimum Inhibitory Concentration (MIC) of *S. china* root extract, a range of concentrations spanning from 25 to 400 µg/mL were examined. The MIC was identified at 100 µg/mL, where it achieved a 50% reduction in *S. aureus* growth compared to the control. Remarkably, at the highest concentration tested (400 µg/mL), the extract demonstrated complete inhibition, resulting in an 8 mm zone diameter, which is comparable to the performance of the standard drug Chloramphenicol. Consequently, the Minimum Bactericidal Concentration (MBC) was established at 400 µg/mL. In assessing the antibacterial capacity of *Smilax china* L. extracts, Even at a concentration of 200 µg/mL, we observed a zone of inhibition measuring 7 mm, which was in close aproximity to the 5 mcg/disc zone produced by ciprofloxacin against *S. aureus.* Zone of inhibition of *S. aureus* Zone of inhibition of *P. aeruginosa*









This demonstrates a notable antibiotic potential at a moderate dosage when compared to conventional antibiotics. Similarly, at a concentration of 25 µg/mL, we observed a zone of inhibition of approximately 6 mm, surpassing ciprofloxacin and matching chloramphenicol's 30 mcg/disc zone against *P. aeruginosa.* These findings indicate that the zone of inhibition increases with a higher concentration of the plant extract.

CONCLUSION

In this research endeavor, our primary focus revolved around exploring the potential antimicrobial attributes inherent in root extracts derived from *Smilax china* L. Our aim was to assess their suitability for potential utilization in pharmaceutical applications, specifically in combating *Staphylococcus aureus and Pseudomonas aeruginosa*.

BIBLIOGRAPHY

1. Aguirre L, Fernandez-Quintela A, Arias N, Portillo MP. Resveratrol: anti-obesity mechanisms of action. *Molecules*. 2014;19:18632–55.
2. Ahmad HI, Shoaib Khan HM, Akhtar N, Ijaz S. Phenolic, flavonoid content and radical scavenging activity of *Smilax china* with its inhibitory potential against clinically important enzymes. *Nat Prod Res*. 2021;35(12):2066-2071.
3. Zhang Y, Zhao Z, Chen H, Fu Y, Wang W, Li Q, Li X, Wang X, Fan G, Zhang Y. The Underlying Molecular Mechanisms Involved in Traditional Chinese Medicine *Smilax china* L. for the Treatment of Pelvic Inflammatory Disease. *Evid Based Complement Alternat Med.* 2021; 2021:5552532.
4. Zheng XW, Zhang L, Zhang WY, Zhang Y, Wang JY, Liu BC, Hu XJ, Hong YL, Yang YQ. Two new xanthones, a new lignin, and twenty phenolic compounds from *Smilax china* and their NO production inhibitory activities. *J Asian Nat Prod Res.* 2020; 22(6):509-520.

DESIGN & SYNTHESIS OF THE SELECTED THIADIAZOLE & OXADIAZOLE DERIVATIVES AS ANTI-PARKINSON'S AGENTS TARGETING SIRT2 ENZYME

Revathi P*, Asif Shaik, Gomathy S

Department of Pharmaceutical Chemistry, JSS College of Pharmacy, JSS Academy of Higher Education & Research, Ooty 643001, The Nilgiris, Tamil Nadu, India.

Email: prevathi3010@gmail.com

INTRODUCTION:

This research study is based on treatment of Parkinson's disease by use of different and newly synthesized drugs, with these new compounds synthesized and structures known we can gain a lot of ideas and information to proceed with drug design and development. Parkinson's is a widespread neurodegenerative disease affecting the human central, peripheral and enteric nervous system. This disease is the repercussion of changes in the neuronal cytoskeleton developing in only few type of nerve cells. The pathology of this disease is evidently targeting the substantia nigra with a loss of neuromelanin-laden dopaminergic projection cells in the pars compact of this nuclear grey . The affected rate of PD is mostly persistent in Mid-west/Great Lakes region and the northern US seaboard. The percentage taken on population based on US medical healthcare is that mean prevalence was found to be 1.6% of PD among 65 years and above. There involves motor and non-motor symptoms, motor is associated with resting tremor (initially unilateral), bradykinesia (slow movements), rigidity, shuffling gait, and postural instability. The non-motor includes cognitive changes, behavioural / neuropsychiatric changes autonomic nervous system failure, sensory and sleep disturbances. Gene interaction factors along with demographic factors are impacting PD susceptibility. The combined interaction of gene and environment may cause disease conditions on humans by altering the DNA as it goes for demographic age, gender and ethnicity are included. PD amongst men is higher than that of women as oestrogen may act as neuroprotective agent. PD due to ethnicity is sparse, white population is having a higher rate than the Asian nations. In the treatment for Parkinson's syndrome Levodopa (L-3, 4-Dioxyphenylalanine) is considered as the standard therapeutic drug for therapy. . Among these neuronal cells, DA is synthesized from the L-3, 4-dihydroxyphenylalanine (L-dopa) deriving from the hydroxylation of tyrosine. Dopamine replacement therapy, mainly through actual dopamine and its original prodrug L-dopa (LD), faces many challenges such as poor blood brain barrier penetration and decreased response to therapy with time. The dual combination of Levodopa and Carbidopa used in the trials were used as a bargain between higher doses along which led in association of greater risk of side effects and minimum, less adequate doses. Therefore it was concluded that treatment with levodopa in combination with Carbidopa had no disease-modifying effect, either beneficial or detrimental. The most effective drug for treatment is levodopa where we take it as a standard drug in comparison to the newly synthesized drugs.

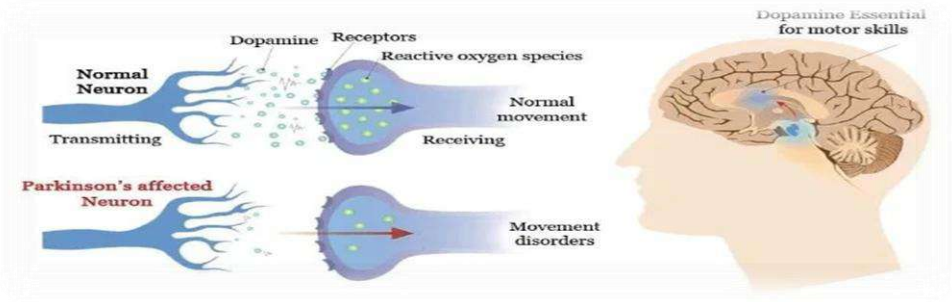


Figure 1: Pathogenesis Involving Dopaminergic

SIRTUIN-2:

SIRT2, the second member of this family, is predominantly localized in the cytoplasm, though it can also shuttle to the nucleus under certain conditions such as during mitosis and cellular stress. It is unique among sirtuins for its role in microtubule dynamics, cell cycle regulation, oxidative stress defense and neurodegeneration. It deacetylates numerous substrates such as α-tubulin, histone H4K16, FOXO transcription factors and metabolic enzymes thereby linking cytoskeletal stability, gene regulation and cellular metabolism. SIRT2 primarily functions as a tubulin deacetylase thereby regulating cytoskeletal organization, cell morphology and intracellular transport.

Dysregulation of SIRT2 has been associated with neurodegenerative diseases (Parkinson's, Alzheimer's and Huntington's), metabolic disorders (obesity, diabetes) and cancer progression. Studies have shown that SIRT2 activity promotes α-synuclein aggregation, oxidative stress and neuronal apoptosis all of which are hallmarks of Parkinson disease (PD) pathogenesis. Conversely, pharmacological inhibition of SIRT2 has demonstrated protective effects by reducing α-synuclein toxicity, restoring mitochondrial function and enhancing neuronal survival. For example, in Parkinson's disease, SIRT2 modulates α-synuclein aggregation, mitochondrial dysfunction and neuronal apoptosis. Thus, pharmacological modulation of SIRT2 through inhibitors or activators depending on context has emerged as a promising therapeutic strategy.

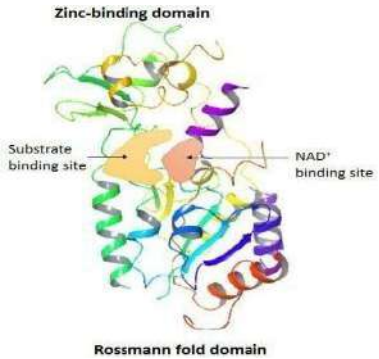


Figure 2: Structure of Sirtuin 2

MATERIALS AND METHODS:

1. *In Silico* Studies:

The workflow of research starts with literature study to find compounds with 5DY5 inhibitors property. Generation of pharmacophore with the identified compounds. Building a dataset using the pharmacophore from databases. Docking of all compounds of dataset with 5DY5 protein. Performing ADME studies for compounds. Generation of lead molecule based on the ADME properties and docking results. Designing of derivatives of lead molecule. Performing ADME studies and docking of all designed compounds against 5DY5 proteins. Performing MM-GBSA and molecular dynamic studies of top compounds.

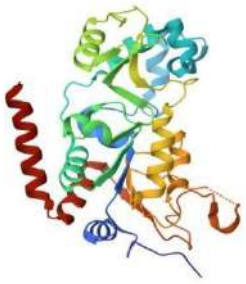


Figure 3: Human SIRT2 (PDB ID: 5DY5)

2. **Synthesis Procedure:**

   Step 1: Condensation process: Aromatic acid reacts with hydrazinecarboxamide & thiosemicarbazide in the presence of phosphorous oxy chloride reflux for 12-14hrs to form oxadiazole amine derivative to removal of water molecules.

   Step 2: Schiff base reaction: Take step1 product react with aromatic aldehyde in presence of ethanol reflux for 5-6hrs to form substituted benzylidine-1, 3, 4oxadiazole-2-amine derivative.

3. **Characterization of the synthesized compounds:**
   - Thin layer chromatography
   - Infra-red spectroscopy
   - Nuclear magnetic resonance spectroscopy
   - Mass spectroscopy.

RESULT & DISCUSSION:

- In this research a number of more than 100 compounds were drawn using Marvin sketch and saved in MOL format.
- The binding mechanisms of thiadiazole & oxadiazole derivatives were evaluated using molecular docking studies. The Schrödinger suite 2025-2s Ligprep module was used to create the compounds' 3D structures and optimization was carried out to produce potential tautomeric forms and low-energy conformers.
- The protein was collected from RCSB and consists of a Crystal structure of human SIRT2 in complex, (PDB ID: 5DY5). Protein preparation was done using Protein Preparation

Wizard of Schrodinger suite and its 3D structure was altered by removing undesirable heteroatoms, water molecules, metal ions and other solvents.

- Docking studies identified several derivatives with high binding affinity ranges from 7.00 kcal/mol to -11.21 kcal/mol and compared with standard resveratrol. Molecular dynamics confirmed the stability of selected ligand–SIRT2 complexes.
- From the results we selected the top 30 compounds based on the binding affinity values. For these 30 compounds we did ADME studies using SwissADME. Based on the ADME properties and docking results, we identified the lead compounds.
- Synthesis of thiadiazole & oxadiazole derivatives by conventional method. Characterization of synthesized compounds by melting point determination, TLC, IR, NMR, Mass Spectroscopy.
- In-vitro studies will be performed for synthesized compounds on MTT assay for Cytotoxicity studies, using SHSY5Y neuroblastoma cells line and antioxidant evaluation of Diphenyl Hydrazyl (DPPH) radical scavenging assay method.

CONCLUSION:

- This study highlights the promising potential of thiadiazole and oxadiazole derivatives as modulators of Sirtuin 2 (SIRT2), offering neuroprotective benefits relevant to Parkinson's disease.
- By employing an integrated approach that combines in-silico methodologies (molecular docking, ADMET prediction, MM-GBSA analysis, and molecular dynamics simulations) with synthetic chemistry and in-vitro evaluations, a rational framework for drug discovery was established.
- Computational analyses demonstrated favorable binding affinities and stable ligand–SIRT2 interactions, while preliminary biological assessments, including MTT assays on SH-SY5Y neuroblastoma cells and DPPH antioxidant assays, supported their safety and antioxidant activity.
- Collectively, these findings suggest that rationally designed thiadiazole and oxadiazole scaffolds represent promising lead candidates for the development of novel anti-Parkinsonian therapies, meriting further preclinical investigation and structural optimization.

REFERENCE:

1) Pallone JA. Introduction to Parkinson's disease. Disease-a-month. 2007 Apr 1;53(4):195-9.
2) Marvanova M. Introduction to Parkinson disease (PD) and its complications. Mental Health Clinician. 2016 Sep 1;6(5):229-35.
3) Outeiro TF, Kontopoulos E, Altmann SM, Kufareva I, Strathearn KE, Amore AM, Volk CB, Maxwell MM, Rochet JC, McLean PJ, Young AB. Sirtuin 2 inhibitors rescue α-synuclein-mediated toxicity in models of Parkinson's disease. science. 2007 Jul 27;317(5837):516-9.
4) Liu Y, Zhang Y, Zhu K, Chi S, Wang C, Xie A. Emerging role of sirtuin 2 in Parkinson's disease. Frontiers in aging neuroscience. 2020 Jan 10;11:372.

5) Singh AP, Nigam L, Yadav Y, Shekhar S, Subbarao N, Dey S. Design and in vitro analysis of SIRT2 inhibitor targeting Parkinson's disease. Molecular diversity. 2021 Nov;25(4):2261-70.
6) Zhang PL, Chen Y, Zhang CH, Wang YX, Fernandez-Funez P. Genetics of Parkinson's disease and related disorders. Journal of medical genetics. 2018 Feb 1;55(2):73-80.

Computational Evaluation of Polyphenols Targeting VEGFR-2 in Tip cellDriven Ocular Neovascularization for Diabetic Retinopathy

1.1 Introduction:

India has become the "Diabetic Capital" of the world, with an estimated 66.6 million individuals affected by diabetes. Among them, around 10 million suffer from diabetic retinopathy, making diabetic blindness a growing public health concern and serious health hazard. Vascular endothelial growth factor (VEGF) is a key mediator in diabetic retinopathy, promoting pathological angiogenesis through its response to retinal hypoxia. Elevated VEGF leads to the formation of fragile, leaky vessels causing fluid accumulation and diabetic macular edema (DME). VEGF also disrupts the blood-retinal barrier by altering tight junction proteins, increasing vascular permeability, and contributing to disease progression.

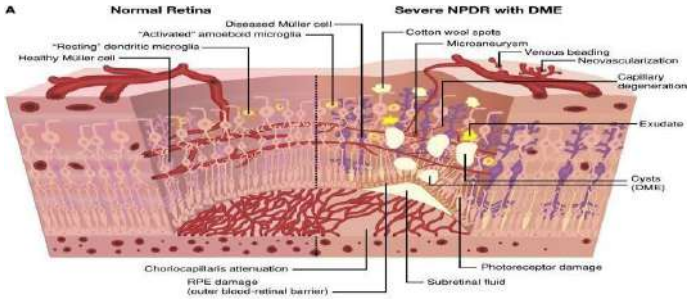
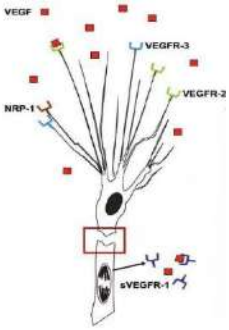


Figure 1: An illustrated schematic of normal retina compared with non-proliferative diabetic retinopathy (NPDR) with diabetic macular edema (DME)

1.2 Hypothesis:

Sprouting angiogenesis is a highly coordinated process in which endothelial cells migrate, form lumenized tubes, establish new vascular connections. Vascular endothelial growth factor receptor 2 (VEGFR2, also known as KDR or FLK1) plays a central role in this process. Notably, the relative expression levels of VEGFR2 dictate endothelial cell fate, with the highest levels of receptor mRNA and protein localized in tip cells, thereby driving angiogenic sprout formation. Given the limited availability of small-molecule therapeutics for diabetic retinopathy (DR), we propose investigating polyphenolic compounds as potential therapeutic leads. By targeting VEGFR2 (PDB: 2XIR), polyphenols may offer a promising strategy to inhibit pathogenic angiogenesis and serve as effective candidates for DR therapy.



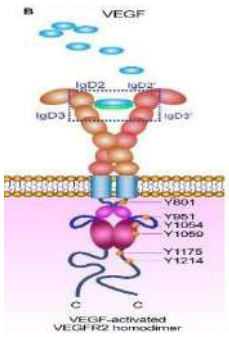


Figure 2: Structure of Endothelial cell *Figure 3: Structure of VEGFR 2*

1.3 BACKGROUND and JUSTIFICATION:

SMART India population based cross sectional screening investigates the prevalence of diabetic retinopathy and vision threatening diabetic retinopathy in India, stratified by known and undiagnosed diabetes, urban or rural location, and socio demographic indices, covering people aged 40 years or older across ten Indian states and one union territory. The national prevalence of diabetic retinopathy is estimated at 12.5 percentage, and VTDR at 4 percentage, translating to approximately 3 million people aged over 40 with VTDR in India. DR prevalence is higher 15.5 percentage among people with known diabetes compared to undiagnosed cases 8 percentage. States with higher epidemiological transition level and socio demographic index SDI had significantly higher DR and VTDR prevalence compared to low ETL or SDI states. The study emphasizes the urgent need for systematic retinal screening and treatment, especially in higher burden.

2. METHODOLOGY:

IN SILICO STUDIES

2.1 Network Pharmacology (PDI): Collect polyphenol and VEGFR 2 target data from databases. Construct the protein-drug interaction (PDI) network to visualize relationships. Analyze key pathways and target interactions to understand polyphenol effects on VEGFR 2.

2.2 Molecular Docking: Prepare VEGFR 2 receptor with PDB ID 3VHE and polyphenol ligands. Use Glide for docking to predict binding conformations and affinities of polyphenol inhibitors.

2.3 MM-GBSA: Calculate binding free energies of the docked VEGFR 2 polyphenol complexes using Prime MM-GBSA to assess binding strength and stability.

2.4 MD Studies: Set up molecular dynamics with Desmond. Simulate VEGFR 2 polyphenol complexes to evaluate structural stability, conformational changes, and interaction dynamics over time.

3. RESULTS:

3.1 Network Pharmacology:

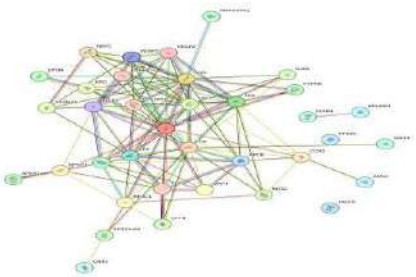


Figure 4: Protein-Protein interaction

Target	Degree	Betweenness	Closeness
EGFR	23	196.56	0.19
INS	20	235.74	0.18
VEGFR	18	114.18	0.18
FGF2	17	58.28	0.18

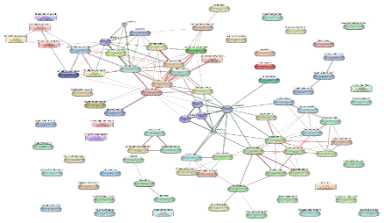


Figure 5: Protein-Drug interaction

Compounds	Degree	Betweenness	Closeness
Paclitaxel	15	161.69	0.08
Gigantol	12	157.56	0.09
Atropine	11	90.83	0.12
Docetaxel	11	31.68	0.08

3.2 Molecular Docking studies:

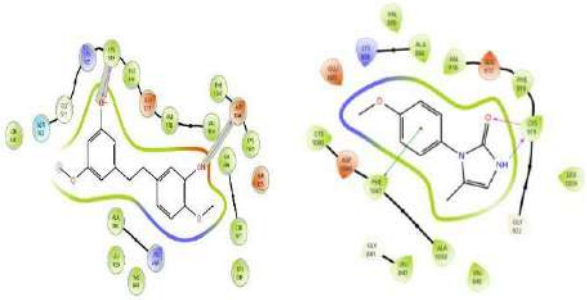
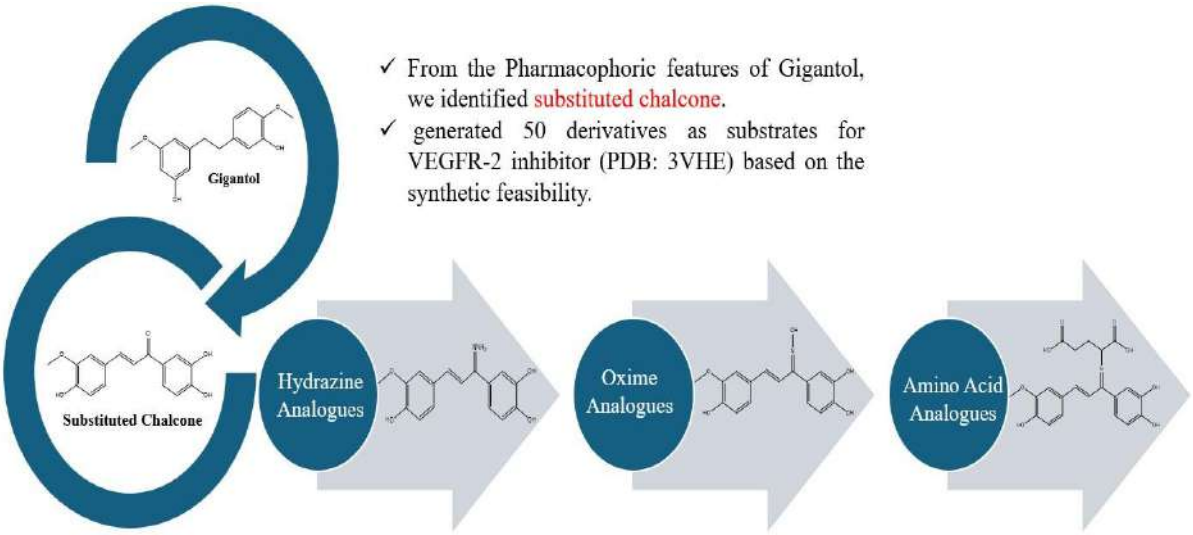


Figure 6: (A) 2D Interaction of 2VHE-Gigantol Complex (B) 2D Interaction of 2VHE- Ranibizumab Complex

Compound name	Docking score
Quercetin	-11.7773
Kaempferol	-11.1327
Luteolin	-10.9168
Genistein	-10.2817
Gigantol	-10.1881
Ranibizumab (STD)	-9.38707

3.3 DESIGN OF MOLECULES:

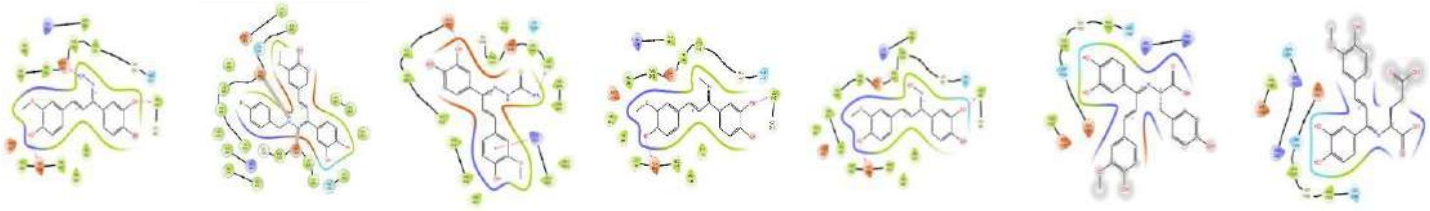


- ✓ From the Pharmacophoric features of Gigantol, we identified substituted chalcone.
- ✓ generated 50 derivatives as substrates for VEGFR-2 inhibitor (PDB: 3VHE) based on the synthetic feasibility.

3.4 DOCKING RESULTS:

S.No	Compound Name	Glide Docking Score	MMGBSA Score				
			dG Bind	Coulomb	Covalent	H bond	Lipo
1.	CH-01	-11.5053	-64.87	-24.43	5.47	-2.53	-23.78
2.	CH-02	-10.7104	-52.74	-17.41	6.50	-1.03	-25.87
3.	CH-03	-8.52753	-45.63	-7.11	11.92	-1.61	-21.59
4.	CO-01	-10.4429	-62.39	-31.40	4.53	-2.60	-24.04
5.	CA-01	-10.4248	-65.97	-25.57	8.26	-2.01	-25.88
6.	CAA-01	-9.76015	-24.39	-2.88	16.07	-1.18	-21.09
7.	CAA-02	-9.10905	-38.95	-7.91	7.91	-1.21	-21.45
8.	Ranibizumab	-9.38707	-28.62	-14.93	2.99	-1.92	-4.51

S.No	Compound Code	Total Mol weight	Log P	Log S	H-Acceptors	H-Donors	Total Surface Area	Polar Surface Area	Drug likeness	Irritant
1.	CH-01	300.313	2.1706	-3.423	6	4	232.32	108.3	-2.3288	None
2.	CH-02	469.334	4.4482	-5.456	6	4	327.41	94.31	0.068134	None
3.	CO-01	301.297	2.8181	-3.345	6	4	230.15	102.51	-0.885	None
4.	CH-03	359.405	2.1358	-3.928	7	5	276.49	152.42	1.496	None
5.	CA-01	299.325	2.3231	-3.026	5	3	236.06	82.28	-0.30765	None
6.	CAA-01	449.458	2.6847	-4.018	8	5	340.27	139.81	-0.98383	None
7.	CAA-02	415.397	1.221	-3.194	9	5	312.02	156.88	-1.9395	None
8.	Ranibizumab	204.228	1.5381	-3.209	4	1	41.57	24.87	2.1491	None



(CH-01) (CH-02) (CH-03) (CA-01) (CO-01) (CAA-01) (CAA-02)

Figure 7: Molecular docking, 2D interaction of chalcone derivatives with 3VHE

3.5 MOLECULAR SIMULATION STUDIES:

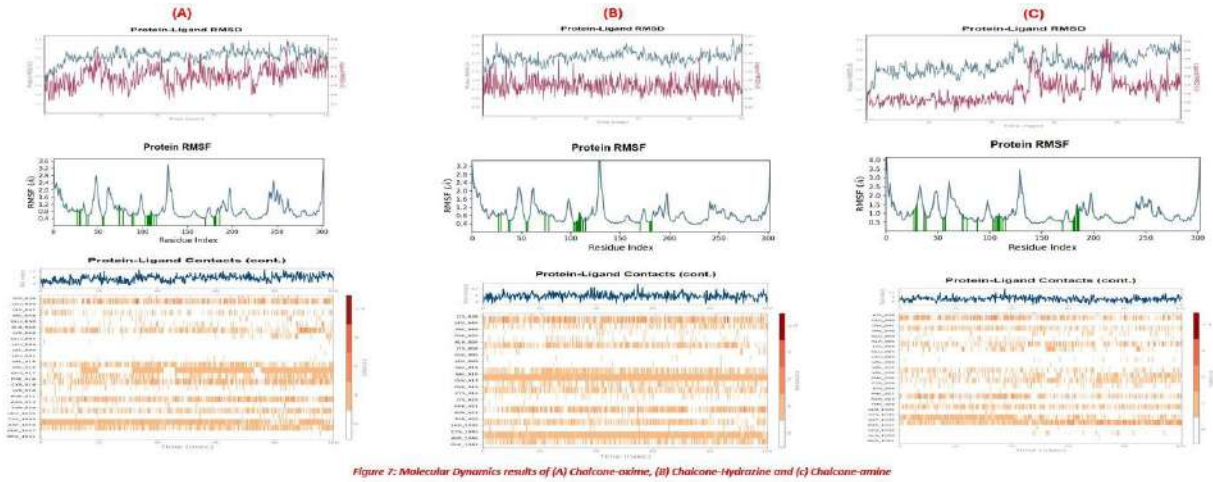


Figure 7: Molecular Dynamics results of (A) Chalcone-oxime, (B) Chalcone-Hydrazine and (C) Chalcone-amine

4. DISCUSSION:

- Diabetic retinopathy is characterized by pathological angiogenesis and increased vascular permeability driven primarily by aberrant VEGFR-2 signalling in retinal endothelial cells. Given the limitations of monoclonal antibody therapies, including invasiveness and high cost, the identification of effective small-molecule inhibitors remains an unmet need.
- In this computational study, polyphenol-based compounds were evaluated for their inhibitory potential against VEGFR-2, a key mediator of tip cell–driven neovascularization.
- Molecular docking and ADME results demonstrated that several polyphenols exhibited strong binding affinity within the VEGFR-2 kinase domain, forming stable interactions with critical residues involved in ATP binding and receptor activation.
- MM-GBSA and Molecular Dynamics simulation state that strong interaction between the ligand and protein complexes thus it is stable.
- Overall, the findings support the feasibility of developing small-molecule VEGFR-2 inhibitors for diabetic retinopathy; however, further experimental validation through In vitro, Ex vivo and In vivo is essential to confirm their biological efficacy.

5. CONCLUSION:

- This computational study identified natural polyphenols (quercetin, kaempferol, luteolin, genistein, gigantol, apigenin) as strong VEGFR-2 binders, with several compounds exhibiting better docking scores than the standard anti-VEGF agent ranibizumab.

- Subsequent design of CH, CO, CA, and CAA series analogs yielded lead molecules such as CH-01, CH-02, CO-01, and CA-01 with further improved docking and MM-GBSA profiles, supporting their consideration as potential small-molecule VEGFR-2 inhibitors for diabetic retinopathy.

6. REFERENCE:

- Blanco R, Gerhardt H. VEGF and Notch in Tip and Stalk Cell Selection. Cold Spring Harb Perspect Med. 2013;3(8):a006569. doi:10.1101/cshperspect.a006569. Correspondence: Holger.Gerhardt@cancer.org.uk
- Zhao, Yuxuan, Yi Chen, and Naihong Yan. "The role of natural products in diabetic retinopathy." *Biomedicines* 12, no. 6 (2024): 1138.
- Wu, J., Lu, C., Li, X., Fang, H., Wan, W., Yang, Q., Sun, X., Wang, M., Hu, X., Chen, C.Y.O. and Wei, X., 2015. Synthesis and biological evaluation of novel gigantol derivatives as potential agents in prevention of diabetic cataract. *PLoS One*, *10*(10), p.e0141092.
- Ma, Yu, Jingjing Yang, Yali Zhang, Chunyan Zheng, Zhen Liang, Ping Lu, Fei Song, Yuwei Wang, and Junjie Zhang. "Development of a naringenin microemulsion as a prospective ophthalmic delivery system for the treatment of corneal neovascularization: in vitro and in vivo evaluation." *Drug delivery* 29, no. 1 (2022): 111-127.

IDENTIFICATION OF NOVEL HIF-1A STABILIZERS FOR DIABETIC WOUND THERAPY THROUGH COMPUTATIONAL EVALUATION

Janani Sri S S[*1], Vasanth R[1], Jubie Selvaraj[1]
[1]Department of Pharmaceutical Chemistry, JSS College of Pharmacy, JSS Academy of Higher Education and Research, Ooty-643001, The Nilgiris, Tamil Nadu, India.
E-mail: jananisrisaakthivel@gmail.com

1. INTRODUCTION:

A diabetic wound is a chronic, slow-healing ulcer or open sore occurring in people with diabetes, typically resulting from impaired circulation, nerve damage, and poor blood sugar control. Annual global incidence is estimated at 2–6%, translating to over 9 million new Diabetic Foot Ulcer cases per year. Hypoxia-inducible factor-1 alpha (HIF-1α) is a key regulator that promotes angiogenesis, tissue regeneration, and cell survival in wound healing but its stability and activity are reduced in diabetic wounds. Enhancing HIF-1α levels is a promising therapeutic strategy for improving wound repair outcomes. HDAC1 normally deacetylates HIF1A at key lysine residues including Lys709, exposing sites for prolyl hydroxylation and promoting recognition by PHD and VHL, ultimately leading to HIF1A degradation. This deacetylation by HDAC1 enhances polyubiquitination and proteasomal degradation of HIF1A, decreasing its protein levels and transcriptional activity. By inhibiting HDAC1, HIF1A can be stabilized, making it a critical regulator of wound healing pathways that promotes tissue repair and vascularization. The rationale is that HDAC1 inhibition can stabilize HIF1A, a key hypoxia-inducible transcription factor that regulates angiogenesis and wound healing processes. Enhanced HIF1A signalling may promote neovascularization and accelerate wound closure in diabetic conditions, where impaired wound healing is a major clinical complication. The present work is a computational investigation aimed at identifying and optimizing therapeutic agents for diabetic wound complications.

2. MATERIALS AND METHODS:

- Literature Survey: extensive literature survey was done on HDAC-1 and HIF-1A in Diabetic wounds.
- Network Pharmacology (PDI): Collect polyphenol and HDAC-1 target data from databases. Construct the protein-drug interaction (PDI) network to visualize relationships. Analyze key pathways and target interactions to understand polyphenol effects on HDAC-1.
- Protein-Protein Docking: Prepare HDAC-1 and partner protein structures. Use Schrodinger to predict interaction interfaces by docking the proteins, revealing possible modulation by polyphenols.
- Molecular Docking: Prepare HDAC-1 receptor and polyphenol ligands. Use Glide for docking to predict binding conformations and affinities of polyphenol inhibitors.
- ADME studies: The designed molecules are checked and evaluated for the physiochemical properties and drug likeness property.
- MM-GBSA: Calculate binding free energies of the docked HDAC-1-polyphenol complexes using Prime MM-GBSA to assess binding strength and stability.
- MD Studies: Set up molecular dynamics with Desmond. Simulate HDAC-1-polyphenol complexes to evaluate structural stability, conformational changes, and interaction dynamics over time.

3. RESULTS:

3.1 Protein-Drug interaction

Table 1. *Protein-drug interaction results of top 10 compounds*

S.No	Query term	Degree	Betweenness	Closeness
1	Resveratrol	11	97.80	0.12
2	Kaempferol	10	16.39	0.11
3	Apigenin	10	16.39	0.11
4	Quercetin	10	16.39	0.11
5	Luteolin	9	10.94	0.11
6	Genistein	8	4.658	0.11
7	Curcumin	7	23.66	0.11
8	Hesperetin	6	0.4	0.11
9	Baicalein	6	19.07	0.116
10	Paclitaxel	6	19.07	0.116

3.2 Protein-protein docking

Protein-protein docking was performed using Schrödinger Suite 2025-2, involving the interaction between p300 (PDB ID: 5J0D) and HDAC-1 (PDB ID: 4BKX). The key interactive amino acid residues of HDAC-1 were identified as follows: Tyr 23, Gly 25, Gly 26, His 28, Pro 29, Lys 31, Met 37, Phe 150, His 178, Lys 200, Gly 203, Tyr 204, Phe 205, Asp 230, Gly 231, Leu 266, Ser 267, Gly 268, Asp 269, Arg 270, Leu 271, Gly 272, Cys 273, phe 274, Asn 275, Leu 276, Tyr 303, Thr 304, Ile 305, Arg 306, Glu 335, Tyr 336, Phe 337, Gly 338, Pro 339, Ser 348, Asn 349, Met 350.

3.3 Molecular docking

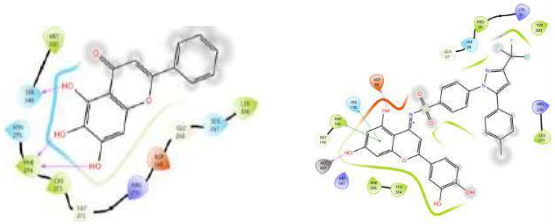
Table 2. *Docking results of top 10 compounds against 4BKX*

S.No	Ligands	Docking score (Kcal/mol)	MMGBSA dG_Bind
1	Baicalein	-7.1	-39.682
2	Luteolin	-7.1	-36.631
3	Quercetin	-6.9	-36.343
4	Genistein	-6.8	-36.031
5	Kaempferol	-6.7	-35.224
6	Hesperetin	-6.6	-31.138
7	Curcumin	-6.5	-28.447
8	Beta sitosterol	-6.5	-28.054
9	Celecoxib	-6.0	-22.230
10	Vorinostat	-5.8	-24.635

Table 3*. Docking results of designed molecules*

S.No	Ligands	Docking score (Kcal/mol)

1	LC	-9.3
2	QC	-8.8
3	GC	-8.6
4	BC	-8.3
5	KC	-7.9



a) Luteolin b) LC

Figure 1. *2D interactions against 4BKX*

3.4 ADME Studies

Table 4. *ADME results of designed conjugates by DataWarrior software*

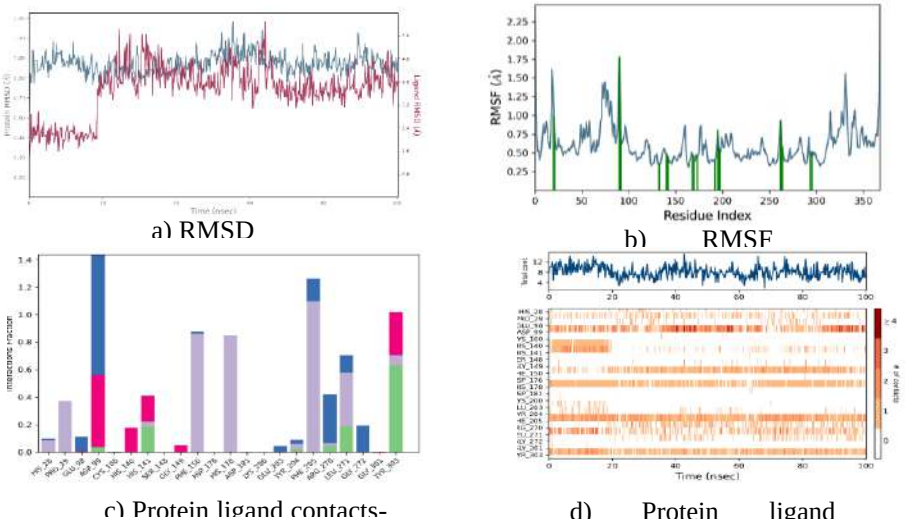
Molecule name	Total Mol wt	cLogP	cLogS	H-Acceptors	H-Donors	Polar Surface Area
GC	633.602	4.995	-6.478	9	3	142.62
BC	633.602	5.7035	-6.607	9	3	142.62
KC	649.601	5.2037	-6.538	10	4	162.85
LC	649.601	5.3578	-6.311	10	4	162.85
QC	665.6	4.858	-6.242	11	5	183.08

3.5 MMGBSA Studies

Table 5. *MMGBSA results of designed small molecule against 4BKX*

Compound name	R_psp_mmgbsa_dg_bind	coulomb	covalent	H bond	Lipo
BC	-48.978	-2.578	0.134	-1.046	-19.795
QC	-51.528	-8.666	11.983	-2.649	-16.485
LC	-40.843	-1.303	6.563	-1.611	-14.949
KC	-46.360	-13.034	2.834	-0.878	-13.162
GC	-41.567	-22.230	3.808	-1.794	-7.665

3.6 Molecular Dynamic Simulation



a) RMSD b) RMSF

c) Protein ligand contacts- d) Protein ligand

Figure 2: Results of Molecular Dynamics Simulation for the compound LC with 4BKX

4. CONCLUSION

Our study demonstrates that targeting HDAC-1, which impairs HIF-1α signaling by competing with p300, may restore angiogenic and repair pathways in diabetic wounds compromised by hypoxia and chronic inflammation. Protein–protein docking confirmed a stable interaction between HDAC-1 and p300, supporting the hypothesis that HDAC-1 inhibition could relieve p300 sequestration and restore HIF-1α transactivation. Molecular docking of polyphenol-based compounds identified several flavonoids with strong affinity toward the HDAC-1 active site, engaging key catalytic residues such as His28, Phe150, Asp230, Gly268, and Arg306. These interactions suggest effective HDAC-1 inhibition potential. To further improve efficacy, celecoxib–flavonoid mutual conjugates were rationally designed to combine epigenetic modulation with anti-inflammatory activity. Among the designed compounds, LC and QC exhibited superior docking scores and favorable MM-GBSA binding energies compared with their parent flavonoids and the reference inhibitor vorinostat. Molecular dynamics simulations demonstrated stable ligand–protein interactions, indicating conformational stability of the complexes. Additionally, ADME analysis showed acceptable drug-likeness and pharmacokinetic profiles, supporting their suitability as lead candidates. Collectively, these findings suggest that dual-acting celecoxib–flavonoid conjugates may effectively address both epigenetic dysregulation and inflammation in diabetic wounds, thereby enhancing HIF-1α stability and promoting wound repair. Future studies will focus on chemical synthesis, HDAC-1 inhibition assays, HIF-1A stabilization studies, and in vitro and in vivo diabetic wound models to confirm therapeutic efficacy.

5. REFERENCES

1. Geng H, Liu Q, Xue C, David LL, Beer TM, Thomas GV, et al. HIF1α protein stability is increased by acetylation at lysine 709. J Biol Chem. 2012;287(42):35496–505.

2. Christensen DP, Dahllöf M, Lundh M, Rasmussen DN, Nielsen MD, Billestrup N, et al. Histone Deacetylase (HDAC) Inhibition as a Novel Treatment for Diabetes Mellitus. Mol Med. 2011 May;17(5–6):378–90.

3. Li X, Yang H, Huang S, Qiu Y. Histone deacetylase 1 and p300 can directly associate with chromatin and compete for binding in a mutually exclusive manner. PloS One. 2014;9(4):e94523.

4. Zhang F, Ma HG, Zhang B, Jiang LL, Nie KY, Deng CL, Liu Y. Potential roles of histone deacetylases in diabetic wound healing. World Journal of Diabetes. 2025 Oct 15;16(10):108346.

5. Mariappan E, Swaroop AK, Negi P, RajanBabu S, Murugesan DK, Varma NP, et al. Identification of effective natural compounds as HIF-1Alpha mimetics for diabetic wound healing; A systematic in-silico study. J Appl Pharm Sci. 2023;13(1):041–50.

PHYTOCHEMICAL CHARACTERIZATION AND ANTIOXIDANT POTENTIAL OF HYGROPHILA AURICULATA (SCHUMACH.) HEINE. USING SPECTROSCOPIC AND CHROMATOGRAPHIC APPROACHES.

SHILPA L S [1], MANONMANI R[2]*

[2]*Assistant Professor, PG & Research Department of Botany, Holy Cross College (Autonomous), Affiliated to Bharathidasan University, Trichy-620002, Tamil Nadu, India.

[1]Research Scholar, PG & Research Department of Botany, Holy Cross College (Autonomous), Affiliated to Bharathidasan University, Trichy-620002, Tamil Nadu, India.

INTRODUCTION

Since early human civilization, plants and plant-derived products have been integral to nutrition and healthcare. India possesses a rich legacy of traditional medicinal systems such as Ayurveda, Siddha and Unani, which are rooted in folk practices. The therapeutic efficacy of medicinal plants is primarily attributed to their diverse phytochemical constituents (Malpotra *et al*., 2025).

Despite advances in modern medicine, nearly 95% of the global population continues to rely on herbal remedies due to their perceived safety, immunomodulatory effects and overall health benefits (Dhanalakshmi *et al*., 2020). This continued dependence underscores the necessity for systematic scientific investigations to identify, characterize and validate bioactive phytocompounds in medicinal plants.

H. auriculata (Schumach.) Heine., a member of the family Acanthaceae, is an important medicinal plant extensively used in traditional medicine. Classical Ayurvedic texts such as Charaka Samhita and Sushruta Samhita document its application in the treatment of male infertility, urinary disorders and digestive ailments (Jadav and Shah, 2024).

In this context, the present study aims to profile the bioactive phytoconstituents of *H. auriculata* (Schumach.) Heine. through biochemical and physicochemical characterization using UV-Visible spectroscopy, FT-IR, GC-MS and antioxidant assays. The analytical findings are systematically interpreted and discussed.

MATERIALS AND METHODS

Collection of plant and preparation of extract

The plants of *H. auriculata* (Schumach.) Heine., were collected from Pudukkottai, Tamil Nadu, India. The leaves were washed, shade dried for 10 days and powdered in mechanical blender. About 10 g of leaves powder was soaked in ethanol for 72 h. The greenish supernatant liquid was filtered by filter paper and condensed in a hot plate at 50°C, which yields gummy extract.

Qualitative phytochemical analysis

The ethanolic leaf extract of *H. auriculata* (Schumach.) Heine. was subjected to different classes of phytoconstituents, using specific reagents and following standard methods by Raman *et al*., 2006.

Ultra Violet (UV)-visible Spectral analysis

UV-Visible spectrum profile of the sample was detected with a Shimadzu UV-1700 spectrophotometer at a wavelength ranging from 200-800 nm.

Fourier Transform Infrared (FT-IR) spectral analysis

The powdered sample was loaded in FTIR spectroscope (Shimadzu, IR AFFINITY-1), with a scan range from 800-4000 cm^{-1}. The peaks obtained were plotted.

Gas Chromatography–Mass Spectrometry (GC-MS) analysis

Chromatographic analysis was carried out using thermo GC-Trace Ultra Ver: 5.0 GC-MS (Model Thermo MS DSQ II gas chromatograph). The GC temperature program was as follows; the initial temperature was 75°, held for 2 min, increased to 150° at a rate of 2°/min, then to 220° at a rate of 3°/ min, and finally to 260° at a rate of 6°/min and held for 10 min. The split ratio was 1:12, the injection temperature was 250°, the transfer line temperature was 270° and the mass spectrometer was operated at 70 eV in a run time of 29 min. The individual components were identified by computerized matching of their mass spectra of peaks with those gathered in the NIST library of the GC-MS data software system.

Antioxidant study

2,2-Diphenyl-1-Picryl-Hydrazyl-Hydrate (DPPH) assay: (Mensor *et al*., 2001)

The diluted working solutions of the test extracts were prepared in ethanol. About 3 ml of graded concentration (10-50 µg/ml) of extracts were taken in different test tubes. 1 ml of 0.3 mM DPPH ethanol solution was added to these test tubes and shaken vigorously. Ethanol served as the blank, and DPPH in ethanol, without the leaf extracts, served as the negative control, where ascorbic acid was a positive control. After 30 min incubation of samples at 25° in the dark, the absorption was measured at 517 nm.

RESULT AND DISCUSSION

In the present investigation, the ethanolic leaf extract of *H. auriculata* (Schumach.) Heine., showed the maximum concentration of phytochemicals such as of alkaloids, flavonoids, terpenoids, phenols, tannins, carbohydrates, cardiac glycosides and saponins as represented. These results corroborate with Rastogi *et al.,* (2014) who reported high intensity of phytochemicals in the ethanolic extract of *H. auriculata* (Schumach.) Heine. leaf.

The UV-Visible spectrum profile of ethanolic leaf extract of *H. auriculata* (Schumach.) Heine. was chosen at a 200-800 nm wavelength. The profile showed the peaks at 664, 610, 532, 400, 280 and 220 nm with the absorption of 0.585, 0.280, 0.302, 1.967 and 4.00 respectively.

FT-IR is an effective analytical instrument for detecting functional groups and characterizing covalent bonding information. The FT-IR spectrum revealed mainly hydroxyl groups, implying Alcohols, Alkanes, Alkanes, Amines, Amines, Carboxylic acid compounds in the ethanolic leaf extract of *H. auriculata* (Schumach.) Heine. with peak values of 3340.71, 2924.09, 2854.65, 1627.92, 1049.28 and 952.83 respectively.

The results of the present study corroborate with the findings of Bharathi *et al.,* (2018), who reported the presence of functional groups such as amines and Carboxylic acid through FT-IR characterization of aqueous extract of *H. auriculata*.

GC-MS analysis to identify the possible bioactive components present in the plant extracts and herbal preparations, which might be helpful for the identification of lead compounds for the development of new pharmaceutical drugs. In the present study the results of the GC-MS analysis exhibited the presence of twenty pharmacologically important compounds from ethanolic leaf extract of *H. auriculata* (Schumach.) Heine. with eight major peaks. Among all, hexadecanoic acid, octadecanoic acid and phytol were previously reported to have antimicrobial activities by

Dhivya and Kalaichelvi (2017). Compounds such as 2-Furancarboxaldehyde, 2,6,10-Trimethyl,14-Ethylene-, Tetradecanoic acid have antimicrobial, antioxidative and antidiabetic properties, n-Hexadecanoic acid possesses antioxidant, antimicrobial and anti-inflammatory properties. Stigma sterol has anticancer efficacies.

DPPH is a stable free radical, which has been widely used in phytomedicine to assess the scavenging activities of bioactive compounds. Ethanolic leaf extract of *H. auriculata* (Schumach.) Heine. showed a significant free radical scavenging capacity. The inhibition percentage of DPPH radical increases with an increase in concentration (48% to 73%). The antioxidant capacity ranged from 43 % to 70 %, which was relatable to the standard. The antioxidant effect is proportional to the disappearance of the purple colour of DPPH in test samples. Antioxidant molecules present in the extracts can quench DPPH free radicals by providing hydrogen atoms or electron and then a colourless stable molecule is formed (Seal, 2012). Similar significant results were reported by Anusha and Immanuel (2019) and Raaman (2015) for various concentrations using the Ethanolic leaf extract of *H. auriculata* (Schumach.) Heine.

CONCLUSION

The integrated analysis, utilizing spectral and chromatographic methods, confirms the leaves ethanolic extract of *H. auriculata* (Schumach.) Heine. are a highly effective source of natural bioactive agents. This rich chemical composition is the definitive basis for the extract robust antioxidant capacity and free radical scavenging ability, thereby providing clear scientific substantiation for its widely recognized therapeutic values.

AKNOWLEDGEMENT

We thank the Department of Science and Technology, Government of India, for providing support through the Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) program (Grant No. SR/FIST/College-/2020/943).

REFERENCES

1. Malpotra, M., Garg, M., Singh, N., Sadhu, S. D., Chopra, R. and Sharma, B. (2025). An overview of bioactive components and phytopharmaceutical potentials of *Hygrophila auriculata*– a herbaceous medicinal plant. *Phytomedicine Plus, 5*(1), 100737.

2. Dhanalakshmi, S., Harikrishnan, N., Srinivasan, N., Pandian, P., Tanisha, B. A., Kumar, M. T., Lokesh, V., Yuvashri, N. and Supriya, S. (2020). A perspective overview on *Hygrophila auriculata*. *Pharmacognosy Journal, 12*(6s), 1748–1752.

3. Jadav, N. H. and Shah, J. S. (2024). Physico-Phytochemical, Heavy metal and Microbiological Analysis of *Hygrophila auriculata* (schumach.) Heine. Leaves and seeds. *Research Journal of Pharmacy and Technology,* 17(11):5196-5200.

4. Raman N.(2006). Phytochemical Technique. New Indian Publishing Agencies. New Delhi; p.19.

5. Mensor, L. L., Menezes, F. S., Leitão, G. G., Reis, A. S., Santos, T. C. and Coube, C. S. (2001). Screening of Brazilian plant extracts for antioxidant activity by the use of DPPH free radical method. Phytother Res. ;15(2):127-30.

6. Rastogi, A., Shankar, S. R. and Mahalingam, G. A. (2014). Phytochemical screening, antioxidant activity and *in vitro* anti-diabetic activity of aqueous, methanolic, ethanolic and chloroformic extracts of *Hygrophila auriculata*. Int J Pharm Pharm Sci;6(5):557-60.

7. Bharathi, S., Kumaran, S., Suresh, G., Ramesh, B. and Sundari, M. N. (2018). Phytosynthesis of silver nanoparticles using *Hygrophila auriculata* leaf extract and assessment of their antibacterial and antioxidant properties. Int J Appl Pharm; 112-8.
8. Dhivya, S. M. and Kalaichelvi, K. (2017). Uv-Vis spectroscopic and FTIR analysis of *Sarcostemma brevistigma*, wight. and Arn. Int J Herbal Med; 9(3):46-9.
9. Seal, T. (2012). Antioxidant activity of some wild edible plants of Meghalaya state of India: A comparison using two solvent extraction systems. Int J Nutr Metab; 4(3):51-6.
10. Anusha, P. and Immanuel, S. R (2019). Antioxidant and antibacterial activities of leaves extract of *Hygrophila auriculata* (Schumach.) Heine. J Pharmacogn Phytochem; (2):1784-9.
11. Raaman, N. (2015). Antioxidant activites and phytochemical analysis of methanol extract of leaves of *Hygrophila auriculata* (Schumach) heine. Int J Curr Pharm Res; 7(4):100-5.

CLINICAL OUTCOME MAPPING OF SIDDHA REGIMENS IN GESTATIONAL DIABETES MELLITUS USING MODERN BIOMARKERS

Tejaswini Rah Raman* [1] , Dr.V. Jayashree [2]
[1*] B.Pharm student, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai
2 Associate Professor, Department of Pharmacology, School of Pharmaceutical Sciences, VISTAS, Chennai
Corresponding Author: Dr.V.Jayashree
Corresponding mail ID: jeya.sps@vistas.ac.in

Introduction

Gestational diabetes mellitus (GDM) is a condition in which blood sugar levels rise during pregnancy, increasing risks for both mother and child. Diagnosis typically relies on the 2-hour 75-g OGTT between 24–28 weeks of gestation, although continuous glucose monitoring (CGM) studies reveal that glycemic variability and elevated mean glucose can occur even earlier. Siddha medicine, a traditional South Indian system, emphasizes diet, lifestyle, and safe herbal interventions to restore metabolic balance. While it cannot replace conventional therapy, Siddha may serve as an adjunctive approach to improve insulin sensitivity, reduce inflammation, and manage oxidative stress. Biomarkers provide an objective framework to evaluate such metabolic effects.

Materials & Methods

We shortlisted a total of 6 biomarkers, across various time lines for evaluating Siddha interventions in GDM:

1. **Fasting Plasma Glucose / OGTT** – glycemic control
2. **HbA1c** – average glucose exposure
3. **Adiponectin** – insulin sensitivity
4. **Chemerin / other adipokines** – inflammation/metabolic signaling
5. **Circulating microRNAs** – early molecular changes
6. **Metabolomic signatures** – systemic metabolic profiling

Blood samples were collected at defined gestational stages. Standard laboratory assays were used: ELISA for adipokines, qPCR for microRNAs, and CGM for glucose profiling.

Experimental Work Done

The experimental focus was primarily on **circulating microRNAs** , which can detect early metabolic dysregulation even before conventional glucose markers change. Peripheral blood samples were analyzed for miRNAs such as **miR-16, miR-29a, and miR-330** , linked to insulin signaling, placental glucose regulation, and inflammation. Siddha interventions included **dietary management (pathiyam), lifestyle modifications, and safe herbal support** , aiming to observe subtle molecular changes.

Results & Discussion

Preliminary evidence suggests trends toward normalized microRNA expression in women following Siddha adjunct measures:

- **miR-16 and miR-29a** indicate potential improvement in insulin sensitivity
- **miR-330** reflects early regulation of placental glucose handling

Traditional markers such as fasting glucose and HbA1c remained within safe ranges, but molecular biomarkers captured subtle early effects. This supports Siddha's role as a **complementary strategy** rather than a replacement for conventional management. However,

variability across studies and the absence of large clinical trials necessitate cautious interpretation.

Conclusion

Siddha medicine, when used adjunctively, shows potential to modulate metabolic pathways and early molecular markers in GDM. Biomarkers such as microRNAs provide sensitive measures of these effects. Nevertheless, **clinical evidence remains limited**, and conventional treatment continues to be essential. Research is ongoing, highlighting the need for biomarker-based studies to validate the safety and efficacy of Siddha interventions in pregnancy.

References

1. Schmidt MI et al. *Gestational diabetes mellitus diagnosed with a 2-h 75-g OGTT and adverse pregnancy outcomes.* Diabetes Care (2001).
2. Continuous glucose monitoring profiles in pregnancies with and without GDM. *Diabetes Care* (2024).
3. Shabana Abbas et al. HbA1c as an early diagnostic marker in GDM. *The Professional Medical Journal* (2024).
4. Aldharee H et al. Association of chemerin levels and GDM: updated meta-analysis. *Int. J. Mol. Sci.* (2025).
5. Non-Coding RNA: Role in Gestational Diabetes Pathophysiology and Complications. *Int. J. Mol. Sci.*
6. Systematic review of circulating microRNA biomarkers in GDM (meta-analysis).

A Network Pharmacology and Pharmacophore Modelling Framework for finding offtarget effects of BACE1

[1]*Doniparthi Neeraja, [1]Dr.Srikanth Jupudi

[1]Department of Pharmaceutical Chemistry, JSS College of Pharmacy/JSS Academy of Higher Education and Research, Ooty, The Nilgiris, India -643001

Introduction:

Alzheimer's disease (AD) is a progressive neurodegenerative disorder characterized by memory loss, cognitive decline, and behavioral impairment. One of the major pathological hallmarks of AD is the accumulation of amyloid-β (Aβ) plaques in the brain, which are generated through sequential cleavage of amyloid precursor protein (APP). β-Secretase 1 (BACE1) is a key enzyme responsible for the initial and rate-limiting step in Aβ formation, making it an attractive therapeutic target for AD intervention.

Despite extensive efforts and the development of several BACE1 inhibitors, most candidates have failed in clinical trials due to poor efficacy and adverse effects. Emerging evidence suggests that lack of target selectivity and unintended off-target interactions may contribute significantly to these failures. Many BACE1 inhibitors interact with multiple biological pathways, resulting in undesirable pharmacological outcomes.

In this context, computational approaches such as pharmacophore modelling, QSAR analysis, molecular docking, and network pharmacology provide powerful tools to understand structural requirements, binding behavior, and off-target profiles of BACE1 inhibitors. The present study employs an integrated in silico framework to identify key pharmacophoric features of BACE1 inhibitors and to investigate their off-target effects using network pharmacology, thereby providing insights into the reasons behind clinical trial failures.

Materials and Methods:

FIG 1- Data Set Collection

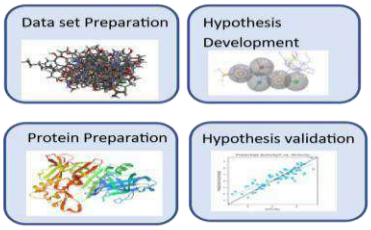


FIG 2- Pharmacophore Modelling Workflow

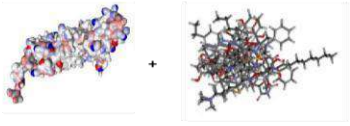


FIG 3 – *IN SILICO* studies in pocket of 6EQM

FIG 4- Workflow for Network Pharmacology

Experimental Work Done :

An integrated computational experimental workflow was successfully implemented in this study. Pharmacophore modelling identified the essential structural features required for BACE1 inhibition. A validated 3D-QSAR model was developed, demonstrating good predictive capability.

Virtual screening and molecular docking revealed favorable interactions of selected compounds with the BACE1 active site, particularly involving the catalytic residues Asp32 and Asp228. MM/GBSA calculations supported the stability of these ligand–protein complexes. Network pharmacology analysis identified multiple off-target interactions and pathways, highlighting the polypharmacological nature of BACE1 inhibitors.

Results and Discussion:

Pharmacophore analysis revealed that effective BACE1 inhibitors require one hydrogen bond donor, one hydrogen bond acceptor, one hydrophobic feature, and two aromatic ring features. However, most reported BACE1 cocrystal structures lacked some of these essential features, explaining their reduced inhibitory potential. The QSAR model showed strong statistical significance, confirming a reliable correlation between structural features and biological activity. Docking studies demonstrated that while several compounds exhibited favorable binding within the BACE1 active site, they also interacted with residues common to other aspartyl proteases. MM/GBSA results further confirmed strong binding affinity but did not guarantee selectivity. Network pharmacology analysis revealed that these compounds interact with multiple proteins and signaling pathways, reducing specificity toward BACE1. This lack of selectivity likely contributes to adverse effects and diminished therapeutic efficacy observed in clinical trials.

The integrated results suggest that inhibition of BACE1 alone is insufficient unless high target specificity is achieved.

Conclusion :

The present study employed a comprehensive in silico framework combining pharmacophore modelling, QSAR analysis, molecular docking, MM/GBSA calculations, and network pharmacology to investigate BACE1 inhibitors. The findings demonstrate that although many inhibitors show strong binding affinity toward BACE1, they lack selectivity and interact with multiple biological pathways. This multi-target behavior is a key factor contributing to clinical trial failures of BACE1 inhibitors.

The study highlights the importance of incorporating network pharmacology early in drug discovery to assess offtarget effects and improve target selectivity. The proposed computational strategy can serve as a valuable tool for the rational design of selective and safer BACE1 inhibitors for Alzheimer's disease.

References:

1. Chidambaram, K. (2023). Identification of BACE-1 inhibitors against Alzheimer's disease through Epharmacophore-based virtual screening and molecular dynamics simulation studies: An insilco approach. *Life*, *13*(4), 952.
2. Hardy J, Selkoe DJ. The amyloid hypothesis of Alzheimer's disease: progress and problems on the road to therapeutics. Science. 2002;297(5580):353–356.
3. Evin G, Barakat A, Masters CL. BACE inhibitors as potential therapeutics for Alzheimer's disease. Int J Biochem Cell Biol. 2010;42(12):1923–1926.

COMBATING RESPIRATORY DISEASES BY A NOVEL APPROACH : THE CURRENT IMPLICATIONS OF HERBAL DRUGS – A REVIEW

D. Mugeshkumar *, Punitha Sundaresan , T. Shri Vijaya Kirubha, S. Karpagam Kumara Sundari , R.Senthamarai

Department of Pharmacology, Periyar College of Pharmaceutical Sciences, Tiruchirappalli-620 021 Tamil Nadu, India.

Corresponding Author E-mail – mugeshkuma091@gmail.com .

Abstract

Ferroptosis is a regulated form of cell death associated with iron accumulation and lipid peroxidation, important in respiratory diseases. Research suggests it causes tissue injury and inflammation in these disorders. The review explores herbal compounds that target ferroptosis, which possess multi-target abilities, low toxicity, and regulatory effects. These compounds may affect specific signaling pathways such as system Xc^--GSH-GPX4, NCOA4-mediated ferritinophagy, Nrf2-GPX4, and Nrf2/HO-1, enhancing treatment and prevention of respiratory diseases. Identifying bioactive compounds that inhibit ferroptosis is essential for developing new therapeutic strategies, showcasing the potential of herbal interventions as novel approaches for combating respiratory diseases by modulating ferroptosis-related mechanism.

Keywords: Respiratory diseases; Ferroptosis; herbal compounds; prevention and treatment.

INTRODUCTION

Respiratory diseases involve multiple complex biological processes. Apart from Necroptosis, apoptosis, and pyroptosis, ferroptosis (a new type of cell death) has garnered attention from researchers. It's an iron dependent cell death, mediated by lipid peroxidation, and involves lipid peroxide accumulation leading to altered cell membrane permeability and ultimately cell death, (Stockwell, 2022). A significant increase in iron deposition in the lungs leads to ferroptosis and contributes to a variety of respiratory diseases, including COPD, bronchial asthma, acute lung injury (ALI), pulmonary fibrosis, and lung cancer. This review delivers the significance of ferroptosis and supports the use of herbal compounds in targeting ferroptosis for the management of respiratory diseases.

MECHANISM AND ROLE OF FERROPTOSIS

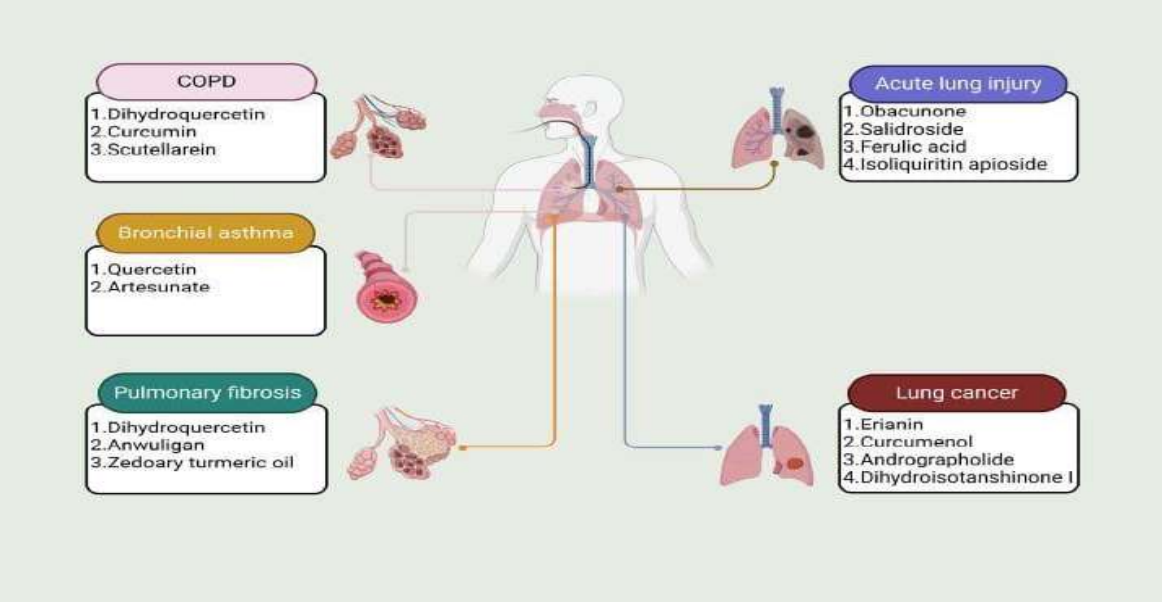
The fundamental mechanism of ferroptosis encompasses iron accumulation and lipid peroxidation. When iron accumulates in cells, it triggers the Fenton reaction, which generates excessive reactive oxygen species (ROS) and lipid peroxidation, leading to altered cell membrane permeability and ultimately cell death.

Ferroptosis inhibitors have lung-protective effects, Iron deposition, and ferroptosis, accompanied by a decrease in cell viability. Compared with the use of apoptosis and necroptosis inhibitors, the above changes were significantly improved after treatment with ferroptosis inhibitors, indicating that ferroptosis is the main pathway of regulatory cell death in pulmonary fibrosis. Hence, ferroptosis has a potential therapeutic target for respiratory diseases. Many herbal drugs are, widely used worldwide and have clinical effectiveness, offering a unique advantage in the prevention and treatment of respiratory diseases. Targeting ferroptosis by natural compounds exerts its therapeutic

effects in respiratory diseases including alleviating oxidative stress, improving the hypersecretion of airway mucus, and regulating pyroptosis and autophagy.

MECHANISM OF HERBAL MEDICINES

Dihydroquercetin, inhibit ferroptosis in COPD by activating the nuclear factor erythroid 2-related factor 2 (Nrf2) signalling pathway, while also regulating ferritinophagy and inhibiting ferroptosis during pulmonary fibrosis. Additionally, scutellarein not only suppresses ferroptosis by inhibiting lipid peroxidation but also directly chelates iron to combat ferroptosis in COPD. The figure depicts various respiratory diseases combated by the herbal compounds via ferroptosis (MengjiaoXu et al., 2024)



CONCLUSION

This review emphasizes that some herbal compounds have potential value for treating respiratory diseases through ferroptosis to delay disease progression. Inhibiting ferroptosis in normal cells can improve disease outcomes, whereas its induction in cancer cells can alleviate cell proliferation and migration. Hence, these herbal compounds regulate ferroptosis through diverse targets and pathways and show promising avenues for preventing and treating respiratory diseases.

BIBLIOGRAPHY

1. Xu, M., Zhang, D., & Yan, J. (2024). Targeting ferroptosis using Chinese herbal compounds to treat respiratory diseases. Phytomedicine, 130, 155738
2. Jiaqi, L., et al. (2024). Phytomedicine: International Journal of Phytotherapy and Phytopharmacology, 109, 154601.
3. Khan, I., et al. (2020). Metabolic & Immune Disorders – Drug Targets, 20, 930–942.
4. Stockwell, B. R. (2022). Ferroptosis turns 10: emerging mechanisms, physiological functions, and therapeutic applications. Cell, 185(14), 2401–2421.

Screening of Preliminary phytochemical and *In-vitro* wound healing property of *Hemigraphis colorata* Leaves (Acanthaceae)

R. Karthikeyan*, S.Shanmuganathan
School of Pharmacy, Sri Balaji Vidyapeeth, Puducherry - 607402

1. Introduction

Medicinal plants play a key role in global health care systems. Despite major advances in modern medicine, plants continue to contribute significantly to disease prevention and treatment. Ancient civilizations and tribal communities systematically documented medicinal plant knowledge, forming the foundation of traditional systems such as Ayurveda. Archaeological evidence indicates the use of herbal remedies nearly 60,000 years ago, as demonstrated by the discovery of medicinal plant residues in a Neanderthal burial site in northern Iraq [1].

The World Health Organization (WHO) recognizes the importance of traditional medicine and emphasizes the need for regulatory frameworks to ensure the safety, efficacy and quality of herbal products [2]. According to WHO guidelines, herbal medicines include herbs, herbal materials, herbal preparations and finished herbal products, provided they do not contain chemically defined synthetic substances or isolated constituents [3].

Standardization of herbal medicines is essential for ensuring consistency, quality and reproducibility. WHO defines standardization as a comprehensive process involving physicochemical evaluation, safety assessment, efficacy documentation and stability studies [4,5]. Phytochemical standardization includes qualitative and quantitative analysis of bioactive compounds and development of chemical fingerprints [6–8].

Hemigraphis colorata is a traditionally used medicinal plant, particularly in folk medicine for treating cuts and wounds. However, scientific evidence supporting its phytochemical composition and wound healing potential remains insufficient. The present study was undertaken to standardize *H. colorata* leaves through phytochemical evaluation and to assess their *in-vitro* wound healing activity, aligning traditional knowledge with modern experimental validation.

2. Materials and Methods

2.1 Plant material and extraction

Shade-dried leaves of *Hemigraphis colorata* were powdered. About 15 g of the powdered material was extracted separately with ethanol, chloroform and benzene using a shaker system for 48 h. The extracts were filtered, concentrated, and stored at 4 °C until further analysis.

2.2 Qualitative phytochemical screening

Preliminary phytochemical screening was carried out on different extracts to detect the presence of major phytoconstituent classes such as carbohydrates, proteins, amino acids, glycosides, alkaloids, flavonoids, tannins, saponins, steroids, terpenoids, gums and volatile oils using standard qualitative tests [9,10].

2.3 *In-vitro* wound healing activity (scratch assay)

The scratch assay was performed to evaluate cell migration. 3T3-L1 fibroblast cells were seeded in 6-well plates and grown to confluence. A scratch was created using a sterile 200 µL pipette tip. Detached cells were removed by washing with sterile phosphate-buffered saline (pH 7.2). The wounded monolayers were treated with *H. colorata* leaf extract (HALE) at concentrations of 10 and 100 µg/mL. Untreated cells served as control. Wound closure was monitored for 24 h using an inverted phase-contrast microscope and quantified using image analysis software [11,12].

3. Results

3.1 Phytochemical screening

Preliminary phytochemical analysis revealed the presence of multiple bioactive constituents in *H. colorata* leaves. Ethanolic extract showed a broad spectrum of phytochemicals, including carbohydrates, proteins, glycosides, flavonoids, tannins and steroids, indicating its suitability for therapeutic applications.

Table 1. Preliminary phytochemical profile of Hemigraphis colorata leaf extracts

Phytochemical	n-Hexane	Ethyl acetate	Ethanol
Carbohydrates	+	–	+
Protein/Amino acids	+	+	+
Glycosides	+	+	+
Alkaloids	–	+	–
Flavonoids	–	+	+
Saponins	–	–	+
Steroids	+	–	+
Terpenoids	+	+	–
Tannins/Phenolics	+	+	+

3.2 *In-vitro* wound healing activity

Treatment with *H. colorata* leaf extract significantly enhanced cell migration and wound closure in both fibroblast and myoblast cell lines compared to untreated control. Higher concentration (100 µg/mL) showed greater wound closure, indicating dose-dependent wound healing potential.

4. Discussion

The present study provides scientific evidence supporting the traditional use of *Hemigraphis colorata* in wound healing. The presence of flavonoids, tannins and terpenoids is noteworthy, as these compounds are known to promote wound contraction, collagen synthesis and cell migration [13–15]. The scratch assay results further confirm the ability of the extract to enhance cellular migration, a critical step in wound repair.

Standardization and phytochemical profiling are crucial for integrating traditional remedies into evidence-based medicine. The findings of this study bridge traditional Ayurvedic knowledge with modern biological validation, supporting the integrative medicine approach.

5. Conclusion

The study establishes preliminary phytochemical standards for *Hemigraphis colorata* leaves and demonstrates their *in-vitro* wound healing potential. The results validate its traditional application in wound management and suggest its promise as a natural wound healing agent. Further molecular and *in-vivo* studies are required to elucidate the mechanisms underlying its therapeutic effects.

References

1. Solecki RS. Shanidar IV, a Neanderthal flower burial in northern Iraq. Science. 1975;190:880–881.
2. World Health Organization. Traditional Medicine Strategy 2002–2005. Geneva: WHO; 2002.
3. World Health Organization. WHO guidelines on assessing quality of herbal medicines. Geneva: WHO; 2000.
4. World Health Organization. Guidelines for the assessment of herbal medicines. Geneva: WHO; 1996.
5. World Health Organization. Quality control methods for herbal materials. Geneva: WHO; 2011.
6. Mukherjee PK. Quality Control of Herbal Drugs. 2nd ed. New Delhi: Business Horizons; 2007.
7. Kunle OF, Egharevba HO, Ahmadu PO. Standardization of herbal medicines: A review. Int J Biodivers Conserv. 2012;4:101–112.
8. Khandelwal KR. Practical Pharmacognosy. 25th ed. Pune: Nirali Prakashan; 2019.
9. Harborne JB. Phytochemical Methods. 3rd ed. London: Chapman & Hall; 1998.
10. Evans WC. Trease and Evans' Pharmacognosy. 16th ed. London: Elsevier; 2009.
11. Liang CC, Park AY, Guan JL. In vitro scratch assay: A convenient method for analysis of cell migration. Nat Protoc. 2007;2:329–333.
12. Grada A, Otero-Viñas M, Prieto-Castrillo F, et al. Research techniques made simple: Wound healing assay. J Invest Dermatol. 2017;137:e11–e16.
13. Lodhi S, Jain AP, Rai G, Yadav AK. Preliminary phytochemical screening and wound healing activity of plant extracts. J Ethnopharmacol. 2016;194:198–204.
14. Akhtar N, Khan BA, Haji M, et al. Evaluation of wound healing activity of medicinal plants. J Ethnopharmacol. 2011;134:673–680.
15. Kumar B, Vijayakumar M, Govindarajan R, Pushpangadan P. Ethnopharmacological approaches to wound healing. J Ethnopharmacol. 2007;114:103–113.

Contact us

Periyar College of Pharmaceutical Sciences
Periyar Centenary Educational Complex
K. Sathanoor Main Road
Tiruchirappalli - 620 021
Tamil Nadu, India

ISBN Number: 978-93-5602-205-8

Phone: +91 - 431 - 2459911
Mobile: +91 77083 68880
Email: periyarcps@gmail.com
Website: www.periyarpharma.in